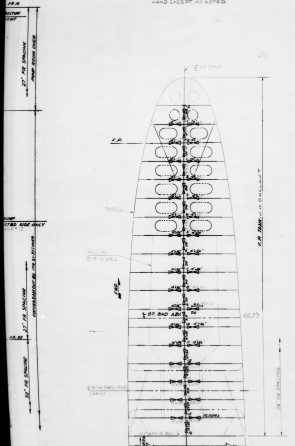
3 | 2 | 1

ABBREVIATIONS

ABV.	ABOVE	LONG'L	LONGITUDINAL
A.O.	ACCESS OPENING	L.H.	LIGHTENING HOLE
℄	CENTER LINE	M.H.	MANHOLE
C.O.	CARGO OIL	N.T.	NON TIGHT
C.V.K.	CENTER VERTICAL KEEL	O.T.	OIL TIGHT
CNTR.	CONTAINER	P/S	PORT AND STARBOARD
DIA.	DIAMETER	SPT.	SUPPORT
F.O.	FUEL OIL	V.L.	VERTICAL LADDER
FR.	FRAME	W.T.	WATERTIGHT
FLR.	FLOOR	ABL	ABOVE BASE LINE
FWD	FORWARD	STGR	STRINGER
GDR.	GIRDER		
F.P.	FORWARD PERPENDICULAR		

GENERAL NOTES:

1. STBD. SIDE DETAILED - PORT SIDE SIMILAR TO OPPOSITE HAND EXCEPT AS NOTED.



PLAN 2-A

FRAME 16 - FWD

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-13-77	6 & 8 8	1. IN PLAN 6A & 8A ACCESS OPENINGS REVISED TO SUIT REF. 9. 2. IN PLAN 8A ECHO SOUNDING WELL AT FR. 77 STBD LABELED. ABV. ALTS. TO SUIT G.G. SHARP APPVL. LTR. DATED MAY 4, 1977.	C.D.S.	JLM JW 7/21/77
2	7-24-80	6	1. MANHOLES & LADDERS FRS. 45-46 RELOCATED TO FRS. 47-48.	CDS	JLM

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 5 APRIL 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED T.J. Mullins
REVIEWED
APPROVED

PLAN NO. H4650-111-10-01
ALT. NO. 2

GENERAL ARRANGEMENT INNERBOTTOM FRS. 77½ - FWD

NO.	PLAN NO.	TITLE
13	129-03-01	FOREPEAK FRAMING, LONGLS & FLATS FR 16½ FWD
12	129-01-36	CARGO OIL TANKS FR 77½ FWD
11	129-03-30	FORE PEAK FRAMING FR 9 FWD
10	232-00-05	VERTICAL LADDERS - INNERBOTTOM
9	144-00-01	MANHOLE LIST - FWD FR. 137
8	129-05-01	SHELL EXPANSION - FR. 77 - FWD.
7	129-03-25	INBOT. & SHELL LONGLS. FR. 77 - FWD.
6	129-03-09	C.V.K. & INNERBOTTOM GIRDERS - FR. 77½ - FWD.
5	129-03-04	TRANSV. FLOORS - FR. 46-77
4	129-03-03	TRANSV. FLOORS - FR. 17-45
3	129-03-02	FOREPEAK FRAMING - FR 10-16
2	129-02-01	INNERBOTTOM PLTG. - FR. 77½ FWD
1	H4650-111-10-02	GEN. ARRGT. INNERBOTTOM - FR. 77½ - 114.27 (H-27)

REFERENCE PLANS

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-4-77				
A.B.S.					
U.S.C.G.	5-20-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE			
	ALTERATION	-	-	1	2
	ENGINEERING DISTRIBUTION	4-6-77	4-6-77	7-26-77	7-25-80
MAIL	OWNERS	4		2	4
MAIL	AMERICAN BUREAU	3		3	
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U.S. NAVY				
MAIL	U.S.C.G.	3		3	
MAIL	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1		1	
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.			1	
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CD SCHAUB			1	
OFFICE	HULL DRAFT. - 21		1P	1	1
OFFICE	MACH. DRAFT. - 22		1P	2	
OFFICE	ELEC. DRAFT. - 23		1P	1	
OFFICE	OUTFIT. DRAFT. - 25				
OFFICE	ESTIMATING				
OFFICE	21-1 ENGR (TPR)		1P	1	
MISC.	PRODUCTION (SCD)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	4	18	5
	YARD DISTRIBUTION	/	4-6-77	7-28-77	
YARD	HAD-OFFICE			1	
YARD	CED. POSTAUGG			1	
YARD	PIECE RATE - 11			1	
YARD	TEST DEPARTMENT				
YARD	QUALITY ASSURANCE			1	
YARD	PLANNING		4P	7	
STRUCTURAL	GROUND ASSEMBLY			4	
STRUCTURAL	35 DEPT.			4	
STRUCTURAL	P. McNAIR			1	
STRUCTURAL	H. LEVY			1	
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.			2	
STRUCTURAL	OPTICAL DETAIL-45			2	
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			2	
MACH'Y & OUTFIT.	BOILER SHOP - 58			1	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			1	
MACH'Y & OUTFIT.	Q-MAT'L			1	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 81				
MACH'Y & OUTFIT.	PAINT SHOP - 75			1	
OTHER	WELDING				
OTHER	MOLD LOFT - 41			1	
OTHER	BRACKET SHOP				
	TOTAL YARD DIST.	/	4	33	

4650-51 - ALT. 1

H-1

22.5 SQ. FT.

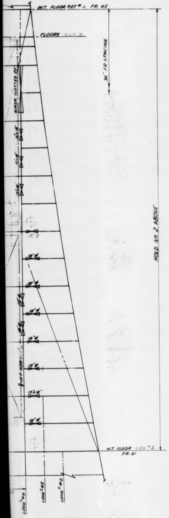
2 | 1

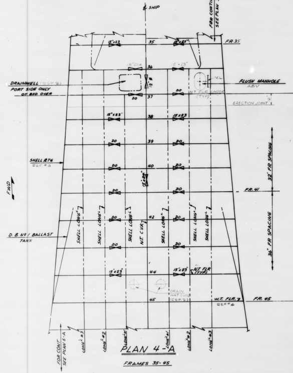
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650- 111-10-01

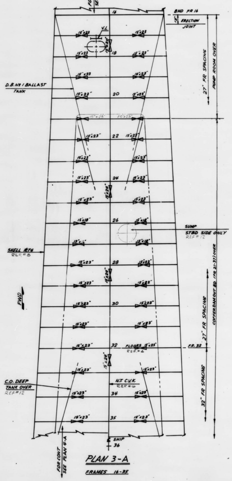
FRAME 1 OF 4


W.T. FLOOR REF# 4 FR. 45
FLOORS REF 5
36" FR SPACING
GIRDR SLOTTED PL
HOLD No 2 ABOVE
W.T. FLOOR REF# 5
FR. 61
LONG'L #4
LONG'L #5
LONG'L #6


℄ SHIP
FOR CONTINUATION SEE PLAN 3-A
FR. 35
15"x23"
18" DIA
DRAINWELL (REF 2) PORT SIDE ONLY OT BHD OVER
FLUSH MANHOLE ABV
V.L.
N.T. FLR UNDER (TYP)
DO
ERECTION JOINT
SHELL RTG REF #8
FWD
FR. 41
32" FR SPACING
36" FR SPACING
FUEL OIL TANK ABV. P/S
D.B. No 1 BALLAST TANK
SHELL LONG'L
N.T. C.V.K.
N.T. FLR (TYP)
DRAIN HAT OVER (REF 2)
W.T. FLR. 7 REF #4
FR. 45
FOR CONT SEE PLAN 6-A
LONG'L #3
LONG'L #2
LONG'L #1
35
36
37
38
39
40
42
44
45

PLAN 4-A

FRAMES 35-45


FOR CONT SEE PLAN 2-A
BHD FR 16
ERECTION JOINT
V.L.
15"x23"
15"x24"
15"x18"
27" FR SPACING
PUMP ROOM OVER
D.B. No 1 BALLAST TANK
SUMP STBD SIDE ONLY REF # 12
SHELL RTG REF # 8
FWD
COFFERDAM OUT BD (FR 21-37) OVER
FLOORS REF # 4
FR. 32
32" FR SPACING
C.O. DEEP TANK OVER REF # 12
N.T. C.V.K. REF # 6
℄ SHIP
36
FOR CONT SEE PLAN 4-A
16
18
20
22
24
26
28
30
32
34
35

PLAN 3-A

FRAMES 16-35

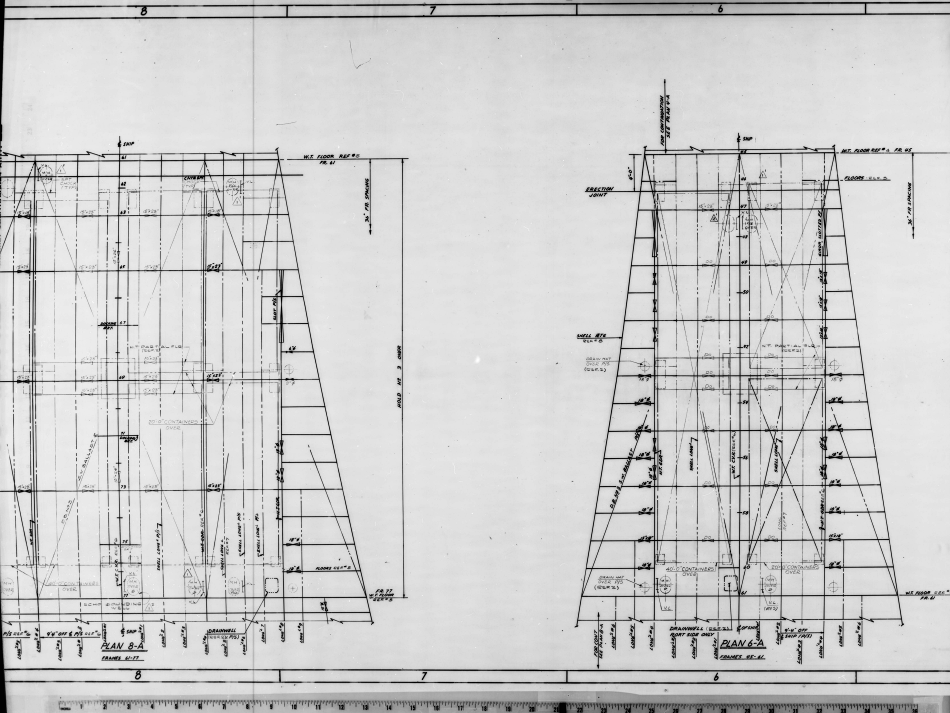
F.P.
SHELL
FLR PL
℄ BOW THRUSTER (ABV)
FWD
CONT. SEE PLAN 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650- 111-10-01

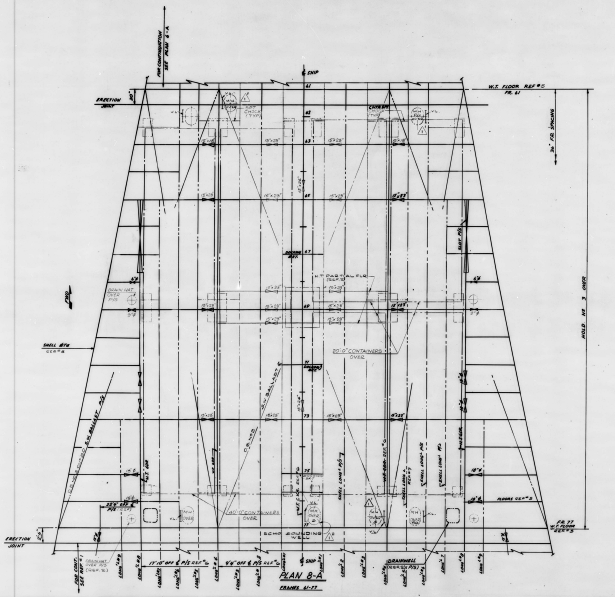
FRAME 2 OF 4


8
7
6
℄ SHIP
W.T. FLOOR REF # 5 FR. 61
36" FR. SPACING
HOLD Nº 3 OVER
SPT CHOCK (TYP)
CNTR SPT CHOCK (TYP)
15"x23"
15"x18"
DOCKING BKT.
W.T. PARTIAL FLR (REF 2)
20'-0" CONTAINERS OVER
40'-0" CONTAINERS OVER
S.W. BALLAST
D.B. Nº 3
SLOT P/S
W.T. GDR.
SHELL LONG'L P/S
FLOORS REF # 5
FR. 77 W.T. FLOOR REF # 5
ECHO SOUNDING WELL
DRAINWELL (REF 2) (P/S)
P/S REF # 6
9'4" OFF ℄ P/S REF # 6
PLAN 8-A
FRAMES 61-77
FOR CONTINUATION SEE PLAN 4-A
W.T. FLOOR REF # 4 FR. 45
ERECTION JOINT
FLOORS REF 5
SHELL PL'TG REF # 8
DRAIN HAT OVER P/S (REF 2)
D.B. Nº 2 S.W. BALLAST
W.T. C.V.K. (REF # 6)
SHELL LONG'L
GIRDR. SLOTTED P/S
W.T. FLOOR REF # 5 FR. 61
HOLD Nº 2 ABOVE
V.L.
V.L. (RES)
FOR CONT SEE PLAN 8-A
DRAINWELL (REF 2) PORT SIDE ONLY
℄ OF SHIP
9'-4" OFF ℄ SHIP (P/S)
PLAN 6-A
FRAMES 45-61

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-01

FRAME 3 OF 4


FOR CONTINUATION SEE PLAN 6-A
℄ SHIP
W.T. FLOOR REF #5 FR. 61
ERECTION JOINT
20"
36" FR. SPACING
SPT CHOCK (TYP)
CNTR SPT CHOCK (TYP)
M.H. OVER
M.H. P/S OVER
V.L.
61
62
63
65
67
69
71
73
75
77
15"x18"
15"x23"
15"x24"
DOCKING BKT.
SLOT P/S
N.T. PARTIAL FLR (REF. 2)
DRAIN HAT OVER P/S
6"ϕ
9"ϕ
FWD
HOLD No 3 OVER
SHELL #76 REF #8
20'-0" CONTAINERS OVER
S.W. BALLAST
D.B. No 3 OUT-BD S.W. BALLAST P/S
D.B. No 3
W.T. GDR
W.T. GDR REF #6
W.T. C.V.K. REF #6
SHELL LONG'L P/S
SHELL LONG'L REF #7
18"ϕ
22'4" OFF ℄ P/S (REF)
40'-0" CONTAINERS OVER
ECHO SOUNDING WELL
FLOORS REF #5
FR. 77 W.T. FLOOR REF #5
2'-6"
15"ϕ
FOR CONT. SEE REF #1
DRAIN HAT OVER P/S (REF. 2)
17'10" OFF ℄ P/S REF #6
9'4" OFF ℄ P/S REF #6
DRAINWELL (REF 2) (P/S)
LONG'L #1
LONG'L #2
LONG'L #3
LONG'L #4
LONG'L #5
LONG'L #6
LONG'L #7
LONG'L #8
LONG'L #9
9
8
7

PLAN 8-A

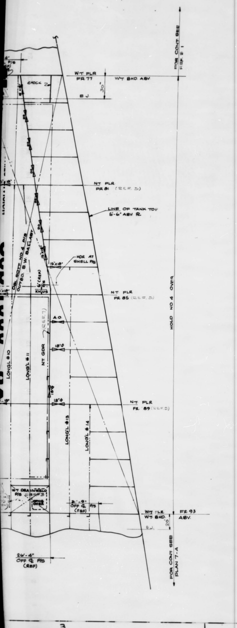
FRAMES 61-77

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-01

FRAME 4 OF 4

3 | 2



ABBREVIATIONS

ABV.	- ABOVE	LONG'L	- LONGITUDINAL
A.H.	- ACCESS HOLE	L.H.	- LIGHTENING HOLE
A.T.	- AIRTIGHT	L.R.	- LADDER RUNGS
BKT.	- BRACKET	M.H.	- MANHOLE
B.L.	- BASELINE	N.T.	- NON TIGHT
℄	- CENTER LINE	O.T.	- OIL TIGHT
C.O.	- CARGO OIL	P/S	- PORT AND STARBOARD
C.V.K.	- CENTER VERTICAL KEEL	PL	- PLATE
DIA.	- DIAMETER	RAD.	- RADIUS
DK.	- DECK	STAN.	- STANCHION
E.J.	- ERECTION JOINT	STBD.	- STARBOARD
F.O.	- FUEL OIL	STL.	- STEEL
FR.	- FRAME	S.W.	- SALT WATER
F.W.	- FRESH WATER	V.L.	- VERTICAL LADDER
FLR.	- FLOOR	W.T.	- WATER TIGHT
FWD.	- FORWARD		
GDR.	- GIRDER		
HDR.	- HEADER		
KNU.	- KNUCKLE		
D. BKT.	- DOCKING BRACKET		

GENERAL NOTES

1. ALL DIMENSIONS ARE SAME P/S UNLESS OTHERWISE NOTED.
2. ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3. SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC., ARE CLEAR OPENINGS.
4. FOR CUTTING ALL ACCESS OPENINGS IN GIRDERS, FLOORS, ETC. EXACT LOCATIONS WILL BE RETAKEN FROM STRUCTURAL PLANS. AFTER APPROVAL OF SAME.
5. ALL VERTICAL LADDERS & LADDER RUNGS WILL BE MIN. 16" WIDE INSIDE STRINGER UNLESS OTHERWISE NOTED.
6. CONTAINER & PADS SHOWN IN PHANTOM ARE ABV. TANK TOP AND ARE FOR GUIDE ONLY.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	7.19.77	4,7 10,13 4,10 13	1. MANHOLES RELOCATED TO SUIT MANHOLE LIST-REF. 11. 2. VERTICAL LADDERS FOR MANHOLES LOCATED IN PIPE TUNNEL INDICATED. ABV ALTS TO SUIT G.G. SHARP APPVL. LETTER OF MAY 4, 1977.	CDS	TLM 7/21/77
2.	7.24.80	3,4	1. MANHOLES AND LADDERS 12'-9¼" & 13'-10¾", 15" AFT FR. 77 RELOCATED TO 18" AFT FR. 79 P/S	CDS	7/24/80 TLM

4651		4650
4650		4650
HULL	DESIGN	CHARGE

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 5 APRIL 1977
DRAWN C/B-S
IN CHARGE
CHECKED
EXAMINED T. L. Mallin
REVIEWED
APPROVED

PLAN NO. H4650-111-10-02
ALT. NO. 2!

GENERAL ARRANGEMENT INNERBOTTOM FRS. 77½-114.27 (M-27)

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-4-77				
A.B.S.					
U.S.C.G.	5-20-77				
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE
12	232-00-05	VERTICAL LADDERS - INNERBOTT.
11	144-00-01	MANHOLE LIST - FWD. FR. 157 (M-43)
10	129-03-27	I.B. & BOT. SHELL LONG'LS - FR. 109 - 114.43
9	129-03-26	I.B. & BOT. SHELL LONG'LS - FR. 77-109
8	129-03-17	INNBOTT. GIRDERS - FR. 109 - 114.43 (M.43)
7	129-03-16	INNBOTT. GIRDERS - FR. 77-109
6	129-03-24	TRANSV. FLOORS - FR. 110 - 114.43 (M.43)
5	129-03-05	TRANSV. FLOORS - FR. 78-109
4	129-02-03	INBOT. PLTG. - FR. 109 - 114.43 (M.43)
3	129-02-02	INBOT. PLTG. - FR. 77-109 (M.27)
2	H4650-111-10-03	GEN. ARRGT. INNERBOTTOM - FRS. 114.27 - 153½
1	H4650-111-10-01	GEN. ARRGT. INNERBOTTOM - FRS. 77½ - FWD.

REFERENCE PLANS

		DATE OF ISSUE			
	ALTERATION	–	–	1!	2!
	ENGINEERING DISTRIBUTION	4/6/77	4/6/77	7/26/77	7/25/80
MAIL	OWNERS	4		2	4
MAIL	AMERICAN BUREAU	3		3	
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U.S. NAVY				
MAIL	U.S.C.G.	3		3	
MAIL	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1		1	
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.			1	
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CD SCHAUB			1	
OFFICE	HULL DRAFT. - 21		[illegible]	1	1
OFFICE	MACH. DRAFT. - 22		[illegible]	2	
OFFICE	ELEC. DRAFT. - 23		[illegible]	1	
OFFICE	OUTFIT. DRAFT. - 26				
OFFICE	ESTIMATING				
OFFICE	SR. ENGR. (STRU)		[illegible]	1	
MISC.	PRODUCTION (BCD)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	4	18	5
	YARD DISTRIBUTION	/	4/6/77	7/8/77	
YARD	HULL OFFICE			1	
YARD	GEO. EASTBURG			1	
YARD	PIECE RATE - 11			1	
YARD	TEST DEPARTMENT				
YARD	QUALITY ASSURANCE			1	
YARD	PLANNING		[illegible]	9	
STRUCTURAL	GROUND ASSEMBLY			4	
STRUCTURAL	35 DEPT			4	
STRUCTURAL	H. LEVY			1	
STRUCTURAL	P. MCNAIR			1	
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.			2	
STRUCTURAL	OPTICAL DETAIL - 46			2	
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			2	
MACH'Y & OUTFIT.	BOILER SHOP - 58			1	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			1	
MACH'Y & OUTFIT.	Q-MATIC			1	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 51				
MACH'Y & OUTFIT.	PAINT SHOP - 78			1	
OTHER	WELDING				
OTHER	MOLD LOFT - 41			1	
OTHER	BRACKET SHOP				
	TOTAL YARD DIST.	/	4	35	

-51-ALT 1

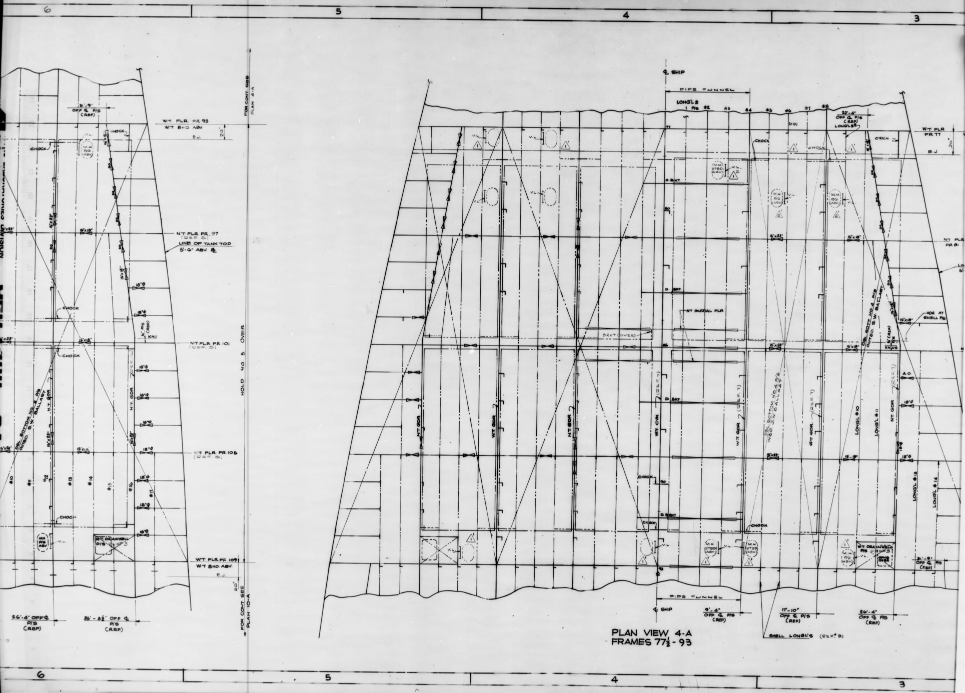
3 | 2 | 1 | H-2

35.080 FT.

BUILDERS PLAN NO. H-4650-111-10-02

FRAME 1 OF 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


6
5
4
3
31'-9" OFF ℄ P/S (REF)
W.T. FLR. FR. 93
W.T. BHD. ABV.
20"
E.J.
FOR CONT. SEE PLAN 4-A
CHOCK
V.L.
M.H. P/S (ABV)
15"x18"
15"x23"
N.T. FLR. FR. 97 (REF. 5)
LINE OF TANK TOP 5'-6" ABV. ℄
18"Φ
6" P/S (REF)
KNU
N.T. FLR. FR. 101 (REF. 5)
HOLD NO. 5 OVER
DBL. BOTTOM NO. 5 P/S OUTBD. S.W. BALLAST
N.T. GDR
N.T. FLR. FR. 106 (REF. 5)
#10
#11
#12
#13
#14
#15
#16
#17
N.T. DRAINWELL P/S
W.T. FLR. FR. 109
W.T. BHD. ABV.
26'-4" OFF ℄ P/S (REF)
35'-3½" OFF ℄ P/S (REF)
FOR CONT. SEE PLAN 10-A
℄ SHIP
PIPE TUNNEL
LONG'L #
1 P/S
#2
#3
#4
#5
#6
#7
#8
22'-4" OFF ℄ P/S (REF)
LONG'L #8
W.T. FLR FR. 77
30"
D. BKT.
M.H. STBD. ABV.
M.H. P/S ABV.
N.T. PARTIAL FLR
BRKT (OVER)
N.T. FLR FR. 81
HDR AT SHELL P/S
DBL. BOTT. NO. 4 P/S OUTBD. S.W. BALLAST
DBL. BOTTOM NO. 4 P/S INBD. S.W. BALLAST
N.T. GDR
W.T. GDR
W.T. CVK
LONG'L #10
LONG'L #11
LONG'L #13
LONG'L #14
A.O.
CHOCK
W.T. DRAINWELL P/S
93
PIPE TUNNEL
℄ SHIP
9'-4" OFF ℄ P/S (REF)
17'-10" OFF ℄ P/S (REF)
26'-4" OFF ℄ P/S (REF)
31'-9" OFF ℄ P/S (REF)
SHELL LONG'L'S (REF. 9)

PLAN VIEW 4-A
FRAMES 77½ - 93

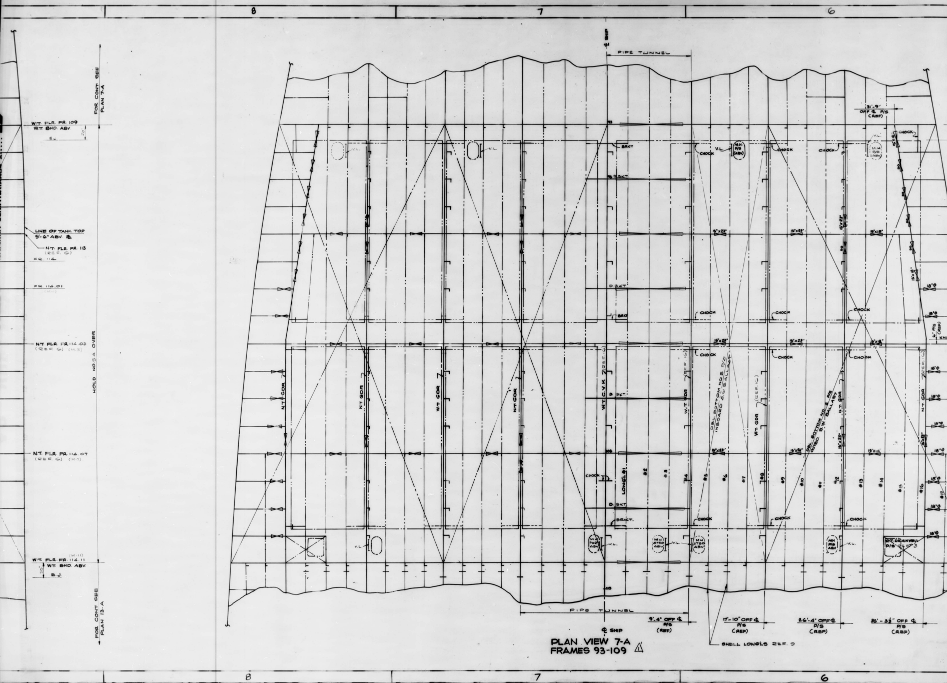
BUILDERS PLAN NO. H-4650-111-10-02

FRAME 2 OF 6

BUILDERS PLAN NO. H-4650-111-10-02

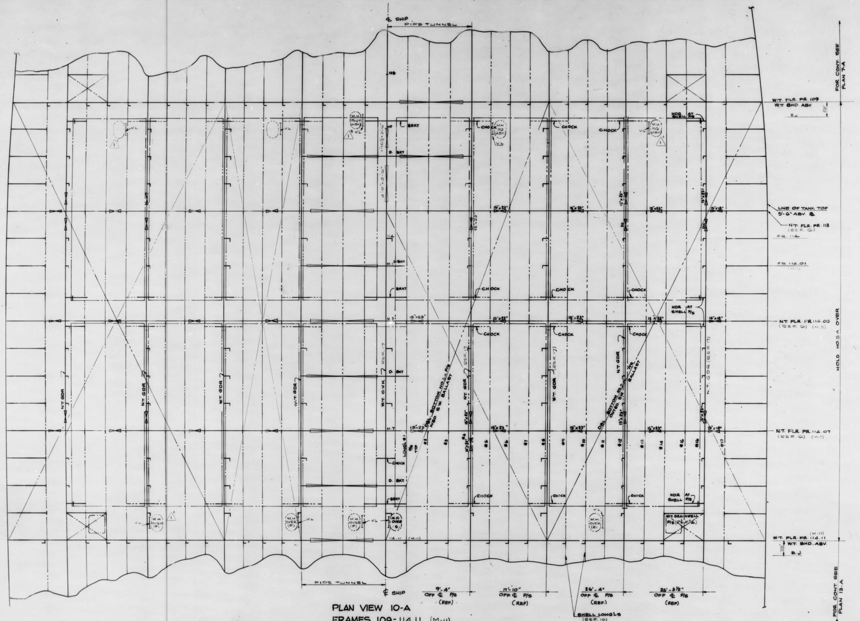
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

FRAME 3 OF 6



8
7
6
℄ SHIP
PIPE TUNNEL
FOR CONT. SEE PLAN 7-A
W.T. FLR. FR. 109
W.T. BHD. ABV.
LINE OF TANK TOP 5'-6" ABV. ℄
N.T. FLR. FR. 113 (REF. 6)
FR. 114
FR. 114.01
N.T. FLR. FR. 114.03 (REF. 6) (M-5)
HOLD NOSA OVER
N.T. FLR. FR. 114.07 (REF. 6) (M-7)
W.T. FLR. FR. 114.11
W.T. BHD. ABV.
B.J.
FOR CONT. SEE PLAN 13-A
31'-9" OFF ℄ P/S (REF)
CHOCK
BRKT
D. BKT.
V.L.
M.H. P/S ABV.
15"x23"
15"x18"
18"Φ
15"Φ
6" P/S (REF) KNU
N.T. GDR
W.T. GDR
W.T. C.V.K.
(REF. 6)
DBL. BOTTOM NO. 6 P/S INBOARD S.W. BALLAST
DBL. BOTTOM NO. 6 P/S OUTBD. S.W. BALLAST
LONGL. #1
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12
#13
#14
#15
#16
#17
M.H. PORT ABV.
M.H. STBD ABV.
M.H. P/S ABV.
N.T. DRAINWELL P/S
93
105
110
9'-4" OFF ℄ P/S (REF)
17'-10" OFF ℄ P/S (REF)
26'-4" OFF ℄ P/S (REF)
35'-3½" OFF ℄ P/S (REF)
SHELL LONGL'S REF. 9
℄ SHIP

PLAN VIEW 7-A
FRAMES 93-109 △1

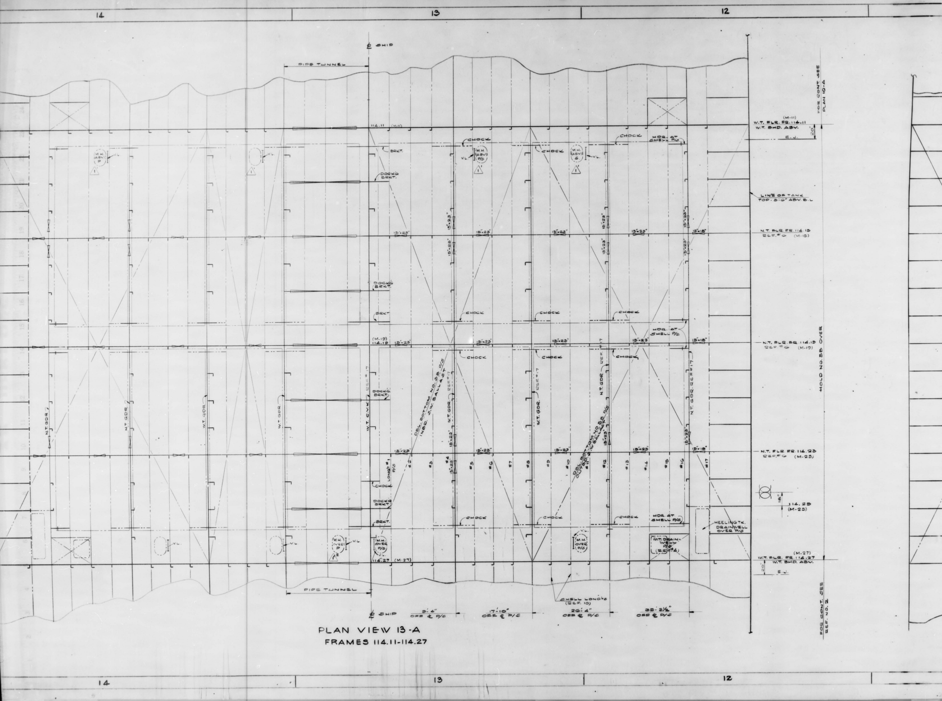

11
10
9
℄ SHIP
PIPE TUNNEL
W.T. FLR. FR. 109
W.T. BHD. ABV.
20"
E.J.
FOR CONT. SEE PLAN 7-A
FOR CONT. SEE PLAN 10-A
108
110
M.H. (PORT) (ABV)
M.H. P/S (ABV)
V.L.
1
1'-10½"×3'-6"
4'-0"×3'-6"
BRKT
D. BKT
CHOCK
15"×23"
15"×18"
DO
114
M-1
M-3
M-7
LINE OF TANK TOP 5'-6" ABV. ℄
N.T. FLR. FR. 113 (REF. 6)
FR. 114
FR. 114.01 (M-1)
HDR AT SHELL P/S
N.T. FLR. FR. 114.03 (REF. 6) (M-3)
HOLD NO. 5A OVER
N.T. GDR
W.T. GDR
W.T. C.V.K.
REF. 17
N.T. GDR (REF. 17)
W.T. GDR (REF. 17)
DBL BOTTOM NO. 5A P/S INBD S.W. BALLAST
DBL BOTTOM NO. 5 P/S OUTBD. S.W. BALLAST
N.T. FLR. FR. 114.07 (REF. 6) (M-7)
LONG'L #1 P/S TYP
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12
#13
#14
#15
#16
#17
D. BKT.
M.H. OVER (P)
M.H. OVER (S)
W.T. DRAINWELL P/S (REF. 2)
114.11 (M-11)
W.T. FLR. FR. 114.11 (M-11)
W.T. BHD. ABV.
20"
E.J.
FOR CONT. SEE PLAN 13-A
FOR CONT. SEE REF. NO. 2
PIPE TUNNEL
℄ SHIP
9'-4" OFF ℄ P/S (REF)
17'-10" OFF ℄ P/S (REF)
26'-4" OFF ℄ P/S (REF.)
35'-3½" OFF ℄ P/S (REF)
SHELL LONG'LS (REF. 10)
11
10
9

PLAN VIEW 10-A
FRAMES 109-114.11 (M-11)

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 111-10-02

FRAME 4 OF 6

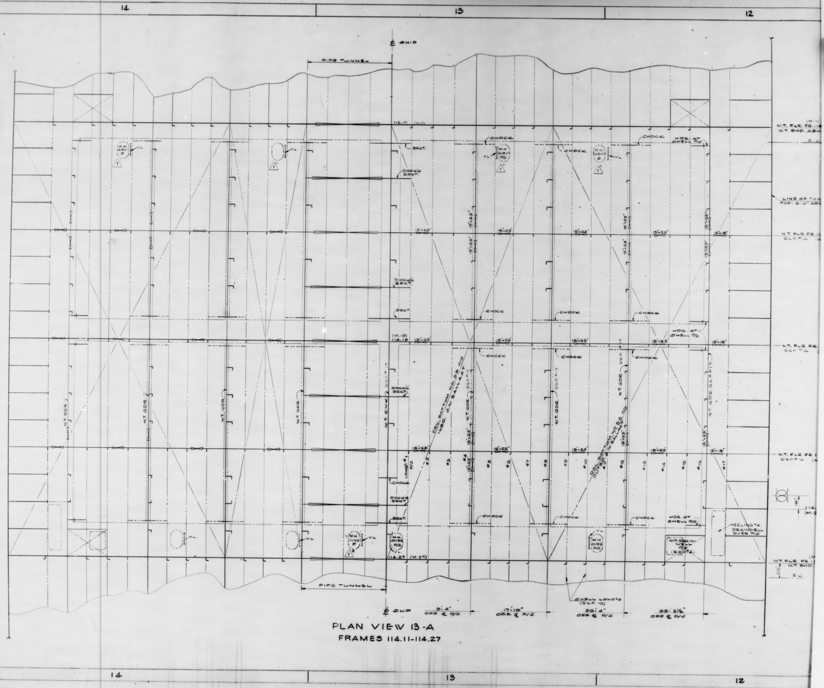

14
13
12
℄ SHIP
PIPE TUNNEL
114.11 (M-11)
(M-11)
W.T. FLR. FR. 114.11
W.T. BHD. ABV.
E.J.
20"
FOR CONT. SEE PLAN 10-A
CHOCK
HDR. AT SHELL P/S
M.H. ABV. P
M.H. (ABV.) P/S
M.H. (ABV.) S
V.L.
BRKT.
DOCK'G BRKT.
LINE OF TANK TOP-5'-0" ABV. B.L.
15"-23"
15"-18"
N.T. FLR. FR. 114.15
REF. #6 (M-15)
(M-19)
114.19
N.T. FLR. FR. 114.19
REF. #6 (M-19)
HOLD NO. 5B OVER
N.T. GDR.
W.T. GDR.
W.T. GDR. REF. #7
W.T. C.V.K. REF. #7
N.T. GDR. REF. #7
DBL. BOTTOM NO. 5B. P/S INBD. S.W. BALLAST
DBL. BOTTOM NO. 5B. P/S OUTBD. S.W. BALLAST
N.T. FLR. FR. 114.23
REF. #6 (M-23)
LONG'L #1 P/S
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12
#13
#14
#15
#16
#17
114.25
(M-25)
18"
HEELING TK. DRAIN WELL OVER P/S
M.H. OVER P
M.H. OVER P/S
W.T. DRAIN WELL P/S (REF. #4)
114.27 (M-27)
(M-27)
W.T. FLR. FR. 114.27
W.T. BHD. ABV.
SHELL LONG'LS (REF. 10)
3'-4" OFF ℄ P/S
17'-10" OFF ℄ P/S
26'-4" OFF ℄ P/S
35'-3½" OFF ℄ P/S
FOR CONT. SEE REF. NO. 2

PLAN VIEW 13-A
FRAMES 114.11-114.27

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-02

FRAME 5 OF 6


14
13
12
℄ SHIP
PIPE TUNNEL
114.11 (M-11)
M.H. (ABV) P
V.L.
1
CHOCK
BRKT.
DOCK'G BRKT.
HDR. AT SHELL P/S
(M-11) W.T. FLR. FR. 114
W.T. BHD. ABV.
E.J.
LINE OF TANK TOP 3'-6" ABV
15"x23"
15"x18"
N.T. FLR FR. 11 REF'G
(M-13) 114.19
W.T. GDR
N.T. GDR
W.T. CVK
REF #17
DBL BOTTOM NO. 58 P/S INBD. S.W. BALLAST
DBL BOTTOM NO. 58 P/S OUTBD. S.W. BALLAST
LONG'L #1 P/S
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12
#13
#14
#15
#16
#17
M.H. OVER P/S
W.T. DRAIN WELL P/S (REF #4)
HEELING TK. DRAIN WELL OVER P/S
114.27 (M-27)
SHELL LONG'LS (REF. 10)
3'-4" OFF ℄ P/S
17'-10" OFF ℄ P/S
26'-4" OFF ℄ P/S
35'-2½" OFF ℄ P/S

PLAN VIEW 13-A

FRAMES 114.11-114.27

BUILDERS PLAN NO. H-4650-111-10-02

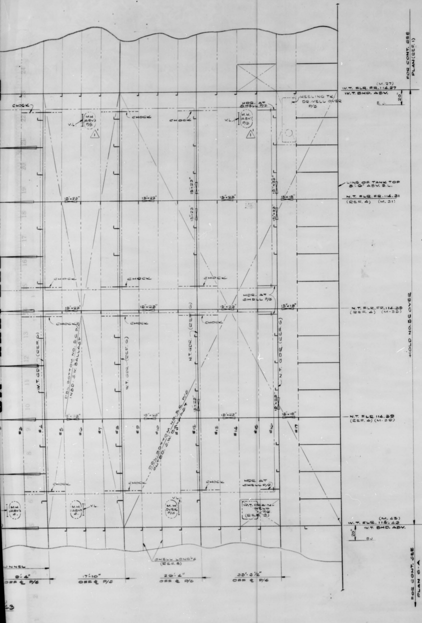
FRAME 6 OF 6

Georgia Avenue Silver Spring, Maryland 20910

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-03

FRAME 1 OF 5


W.T. FLR. FR. 114.27 (M.27)
W.T. BHD. ABV.
FOR CONT. SEE PLAN (REF. 1)
HEELING TK. DR. WELL OVER P/S
CHOCK
M.H. ABV. P/S
V.L.
HDR. AT SHELL P/S
LINE OF TANK TOP 5'-6" ABV. B.L.
N.T. FLR. FR. 114.31 (REF. 4) (M.31)
N.T. FLR. FR. 114.35 (REF. 4) (M-35)
N.T. FLR. 114.39 (REF. 4) (M-39)
HOLD NO. 5C OVER
15"×23"
13"×18"
W.T. GDR. (REF. 6)
N.T. GDR. (REF. 6)
CTL. BOTTOM NO. 5C P/S INBD. S.W. BALLAST
CTL. BOTTOM NO. 5C P/S OUTBD. S.W. BALLAST
W.T. DRAIN WELL P/S (REF. 3)
M.H. OVER P/S
W.T. FLR. FR. 114.43 (M.43)
SHELL LONG'LS (REF. 8)
9'-4" OFF ℄ P/S
17'-10" OFF ℄ P/S
26'-4" OFF ℄ P/S
35'-3½" OFF ℄ P/S
FOR CONT. SEE PLAN 6-A
#1 #2 #3 #4 #5 #6 #7 #8 #9 #10 #11 #12 #13 #14 #15 #16 #17

NOTES:
SEE REFERENCE NO. 1 FOR GENERAL NOTES.

ALTERATIONS

NO	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	7-20-77	ALL 4,10 & 13	1. MANHOLES RELOCATED TO SUIT MANHOLE LIST REFERENCE 10. 2. VERTICAL LADDERS FOR MANHOLES LOCATED IN PIPE TUNNEL INDICATED	CDS	

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 5 APRIL 1977
DRAWN C/B - S
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-03
ALT. NO. 1

GENERAL ARRANGEMENT INNERBOTTOM FRS. 114.27-153½ (M-27)

REFERENCE PLANS

NO.	PLAN NO.	TITLE
11	232-00-05	VERTICAL LADDERS - INNERBOTTOM
10	144-00-01	MANHOLE LIST - FWD FR. 157
9	129-03-27	I.B. & BOT. SHELL LONG'LS - FR. 109 - 114.43
8	129-03-26	I.B. & BOT. SHELL LONG'LS - FR. 114.43 - 153
7	129-03-18	CVK & INBOT. GIRDERS - FR. 114.43 - 153
6	129-03-17	INBOT. GIRDERS - FR. 109 - 114.43 (M-43)
5	129-03-06	TRANSV. FLOORS - FR. 114.27 - 153
4	129-03-24	TRANSV. FLOORS - FR. 110 - 114.43 (M-43)
3	129-02-04	INBOT. PLTG. - FR. 114.43 - 153½
2.	H4650-111-10-04	GEN. ARRGT. - INNERBOTTOM - FRS. 153½ - AFT
1.	H4650-111-10-02	GEN. ARRGT. - INNERBOTTOM - FRS. 77½ - 114.27

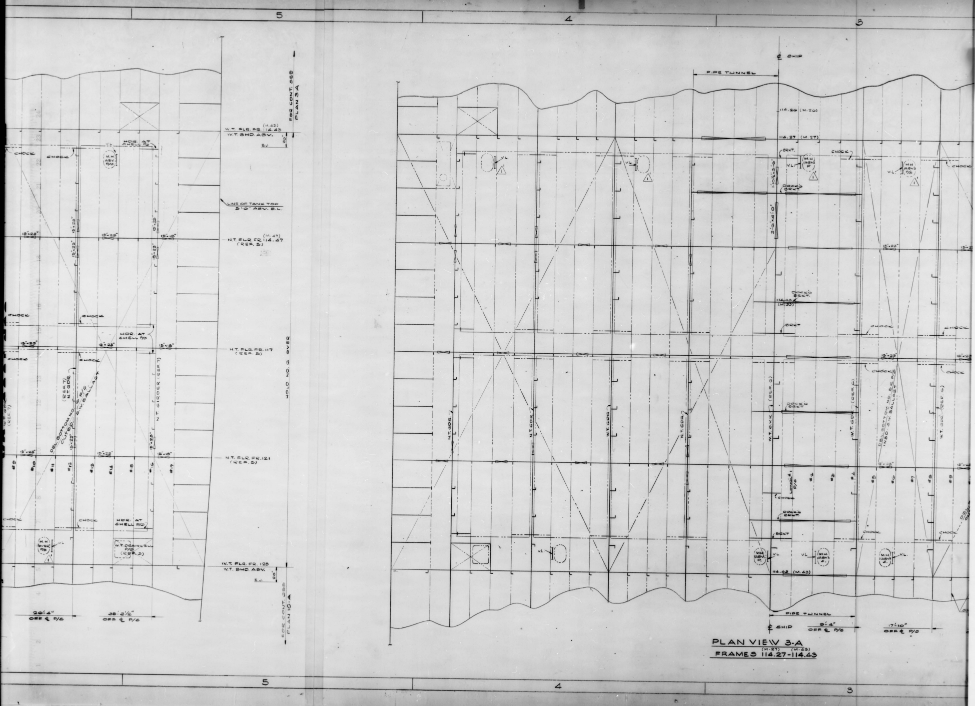
APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-4-77				
A.B.S.					
U.S.C.G.	5-20-77				
LLOYD'S R.S.					
U.S.P.H.S.					

H-3

		DATE OF ISSUE		
	ALTERATION	—	—	1
	ENGINEERING DISTRIBUTION	4-6-77	4-6-77	7-26-77
MAIL	OWNERS	4		2
	AMERICAN BUREAU	3		3
	LLOYD'S R.S.			
	U.S.M.A.			
	U.S. NAVY			
	U.S.C.G.	3		3
	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	1		1
	AM. BU. INSP.			1
	LLOYD'S INSP.			
	U.S.M.A. INSP.			1
	U.S. NAVY INSP.			
	U.S.C.G. INSP.			1
	CD SCHAUB			1
OFFICE	HULL DRAFT. - 21		VP	1
	MACH. DRAFT. - 22		VP	2
	ELEC. DRAFT. - 23		VP	1
	OUTFIT DRAFT. - 25			
	ESTIMATING			
	2H ENGR [illegible]		VP	1
MISC.	PRODUCTION (BCO)			
	ORDER DEPT.			
	JOINER CONT. YARD			
	TOTAL ENG'R. DIST.	11	4	18
	YARD DISTRIBUTION		4-6-7	7-28-77
YARD	[redacted] HAD. OFFICE			1
	GEO. [illegible]			1
	PIECE RATE - 11			1
	TEST DEPARTMENT			
	QUALITY ASSURANCE			1
	[redacted] PLANNING		VP	7
STRUCTURAL	GROUND ASSEMBLY			4
	35 DEPT			4
	P. McNAIR			1
	H. LEVY			1
	NO. WAY			
	NO. WAY			
	NO. WAY			
	NO. WAY			
	STRUCT. SUPER.			2
	OPTICAL DETAIL-46			2
	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP - 52			
	OUTFIT. #1 PIER			1
	PIPE DRAFT. - 52			2
	BOILER SHOP - 58			1
	OUTSIDE MACH. - 60			1
	D. MAT'L			1
	ELECTRIC SHOP - 70			
	SHEET MET. SHOP - 74			
	COPPER SHOP - 81			
	PAINT SHOP - 75			1
OTHER	WELDING			
	MOLD LOFT - 41			1
	BRACKET SHOP			
	TOTAL YARD DIST.	/	4	33

35.0 SQ. FT.



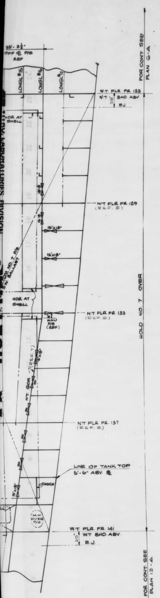
5
4
3
FOR CONT. SEE PLAN 3A
W.T. FLR. FR. 114.43 (M.43)
W.T. BHD. ABV.
CHOCK
HDR. AT SHELL P/S
M.H. ABV. P/S
LINE OF TANK TOP 3'-6" ABV. B.L.
N.T. FLR. FR. 114.47 (M.47) (REF. 5)
H.T. FLR. FR. 117 (REF. 5)
N.T. FLR. FR. 121 (REF. 5)
W.T. FLR. FR. 125
W.T. BHD. ABV.
15"×23"
15"×18"
N.T. GIRDER (REF. 7)
N.T. GDR (REF. 7)
DBL. BOTTOM NO. 5 P/S CUTED S.W. BALLAST
HOLD NO. 6 OVER
W.T. DRAIN WELL P/S (REF. 3)
M.H. OVER P/S
26'-4" OFF ℄ P/S
35'-3 1/2" OFF ℄ P/S
FOR CONT. SEE PLAN 10-A
℄ SHIP
PIPE TUNNEL
114.26 (M.26)
114.27 (M.27)
BRKT.
DOCKG BRKT.
114.33 (M.33)
N.T. GDR.
W.T. GDR.
W.T. C.V.K. (REF. 6)
W.T. GDR (REF. 6)
DBL. BOTTOM NO. 5 C.P. INBD S.W. BALLAST
LONGL P/S
VL
M.H. ABV. P
114.43 (M.43)
9'-4" OFF ℄ P/S
17'-10" OFF ℄ P/S

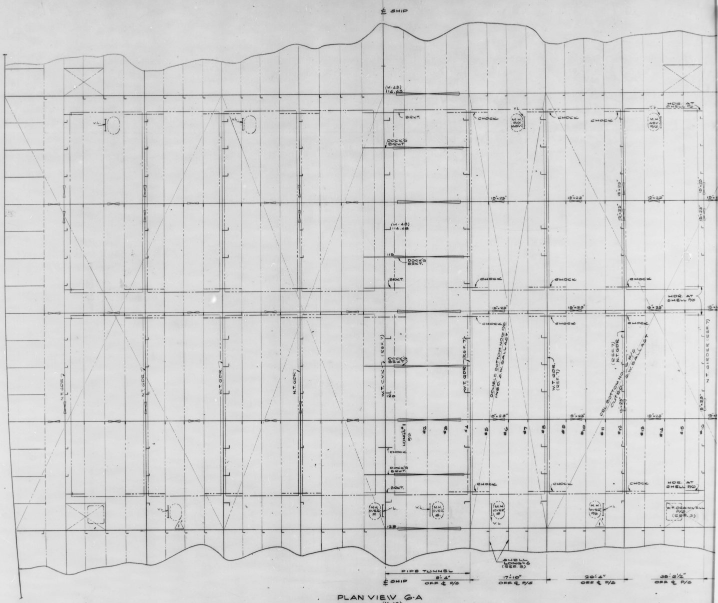
PLAN VIEW 3-A

FRAMES 114.27-114.43 (M-27) (M-43)

BUILDERS PLAN NO. H-4650-111-10-03

FRAME 2 OF 5


35'-3½" OFF ℄ P/S REF
LONGL #15
LONGL #16
LONGL #17
W.T. FLR. FR. 125
W.T. BHD. ABV.
20
BJ
FOR CONT. SEE PLAN G-A
HDR AT SHELL
18"⌀
N.T. FLR. FR. 129 (REF. 5)
15"⌀
15"x18"
15"x18"
BOTTOM NO. 7 P/S S.W. BALLAST
HDR AT SHELL
N.T. FLR. FR. 133 (REF. 5)
KNU P/S (REF.)
HOLD NO. 7 OVER
15"x18"
N.T. GDR. (REF. 7)
N.T. FLR. FR. 137 (REF. 5)
LINE OF TANK TOP 5'-6" ABV. B.L.
CHOCK
15"x18"
M.H. OVER P/S
W.T. FLR. FR. 141
W.T. BHD. ABV.
20
B.J.
FOR CONT. SEE PLAN 13-A


℄ SHIP
(M-43) 114.43
BRKT.
DOCK'G BRKT.
CHOCK
V.L.
M.H. ABV. P/S
HDR. AT SHELL P/S
15"x23"
(M-43) 114.43
115
DOCK'G BRKT.
BRKT.
N.T. GDR.
W.T. GDR.
W.T. C.V.K. (REF. 7)
120
W.T. GDR. (REF. 7)
DOUBLE BOTTOM NO. 6 P/S INCL. S.W. BALLAST
DBL. BOTTOM NO. 6 P/S CUT BD. S.W. BALLAST
N.T. GDR. (REF. 7)
N.T. GIRDER (REF. 7)
LONGL #1 P/S
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12
#13
#14
#15
#16
CHOCK
DOCK'G BRKT.
BRKT.
M.H. OVER P/S
V.L.
125
W.T. DRAINWELL P/S (REF. 3)
SHELL LONGL'S (REF. 8)
PIPE TUNNEL
℄ SHIP
8'-4" OFF ℄ P/S
17'-10" OFF ℄ P/S
26'-4" OFF ℄ P/S
35'-3½" OFF ℄ P/S

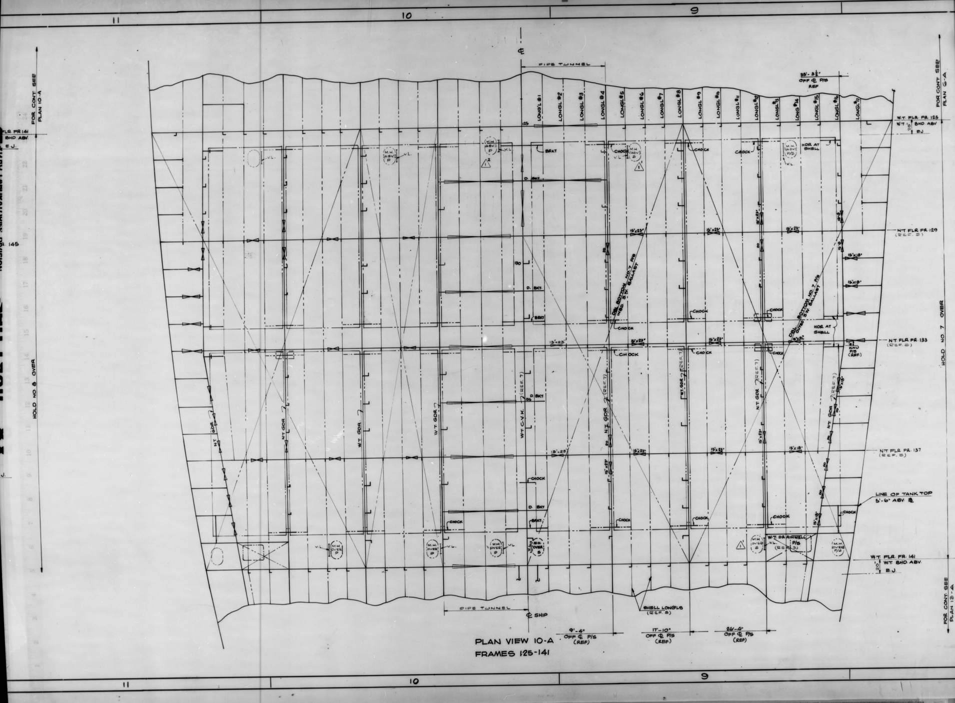
PLAN VIEW G-A

FRAMES $\overset{(M\text{-}43)}{114.43}$-125

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-03

FRAME 3 OF 5

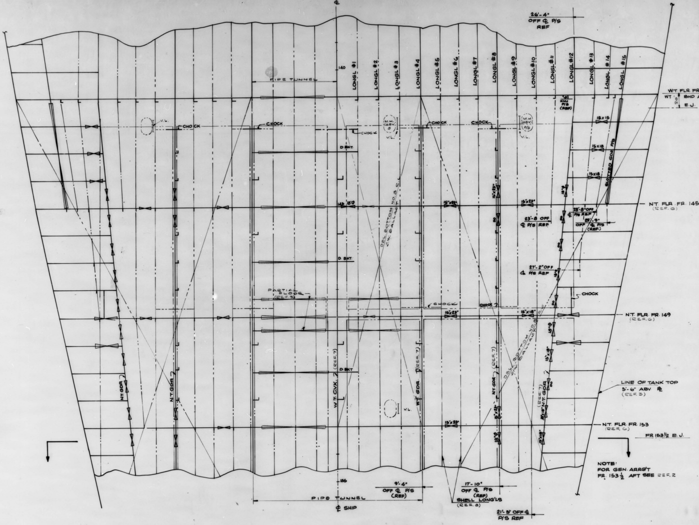

11
10
9
℄
PIPE TUNNEL
LONG'L #1
LONG'L #2
LONG'L #3
LONG'L #4
LONG'L #5
LONG'L #6
LONG'L #7
LONG'L #8
LONG'L #9
LONG'L #10
LONG'L #11
LONG'L #12
LONG'L #13
LONG'L #14
LONG'L #15
LONG'L #16
LONG'L #17
35'-3½" OFF ℄ P/S REF
FOR CONT SEE PLAN 10-A
FOR CONT SEE PLAN 6-A
FOR CONT SEE PLAN 13-A
W.T. FLR FR 125
W.T. BHD ABV
E.J.
W.T. FLR FR 141
W.T. BHD ABV
E.J.
FLR FR 141
BHD ABV
FR. 145
N.T. FLR FR 129 (REF. 5)
N.T. FLR FR 133 (REF. 5)
N.T. FLR FR 137 (REF. 5)
HOLD NO 8 OVER
HOLD NO 7 OVER
M.H. ABV P
V.L.
BRKT
D. BKT
CHOCK
HDR AT SHELL
DBL BOTTOM NO 7 P/S INBD S.W. BALLAST
DBL BOTTOM NO 7 P/S OUTBD S.W. BALLAST
15"x23"
15"x18"
KNU P/S (REF)
W.T. GDR (REF 7)
N.T. GDR
W.T. C.V.K. (REF. 7)
LINE OF TANK TOP 5'-6" ABV. B
M.H. OVER P
M.H. OVER S
W.T. DRAINWELL P/S (REF. 3)
SHELL LONG'LS (REF. 8)
PIPE TUNNEL
℄ SHIP
9'-4" OFF ℄ P/S (REF)
17'-10" OFF ℄ P/S (REF)
26'-4" OFF ℄ P/S (REF)

PLAN VIEW 10-A
FRAMES 125-141

BUILDERS PLAN NO. H-4650-111-10-03

FRAME 4 OF 5

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

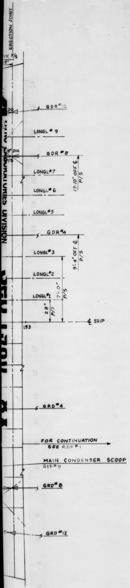

14
13
12
26'-4"
OFF ℄ P/S
REF
PIPE TUNNEL
140
LONGL #1
LONGL #2
LONGL #3
LONGL #4
LONGL #5
LONGL #6
LONGL #7
LONGL #8
LONGL #9
LONGL #10
LONGL #11
LONGL #12
LONGL #13
LONGL #14
LONGL #15
W.T. FLR. FR 141
W.T. BHD ABV.
20
E.J.
KNU P/S (REF)
V.L.
CHOCK
M.H. ABV. P/S
18 x 15
15 x 18
SLOTTED GDR P/S
D BKT
14"Φ 18"Φ
15"x23"
DBL BOTTOM NO. 3 C.L. S.W. BALLAST
N.T. FLR. FR. 145
(REF. 6)
23'-8 OFF
℄ P/S REF
28'-8" OFF
℄ P/S REF
29'-9"
OFF ℄ P/S
(REF.)
27'-2" OFF
℄ P/S REF
PARTIAL FLOOR
(REF. 3)
15"x18"
N.T. FLR. FR. 149
(REF. 6)
N.T. GDR
W.T. CVK. (REF. 7)
W.T. GDR (REF. 7)
N.T. GDR (REF. 7)
DBL BOTTOM NO. 5 S.W. BALLAST P/S
LINE OF TANK TOP
5'-6" ABV ℞
(REF. 3)
N.T. FLR. FR. 153
(REF. 6)
FR 153½ E.J.
NOTE:
FOR GEN. ARRG'T
FR. 153½ AFT SEE REF. 2
155
9'-4"
OFF ℄ P/S
(REF)
17'-10"
OFF ℄ P/S
(REF)
SHELL LONG'LS
(REF. 8)
21'-8" OFF ℄
P/S REF
PIPE TUNNEL
℄ SHIP
14
13
12

PLAN VIEW 13-A
FRAMES 141-153½

GRAPHIC SERVICES 87-P4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-03

FRAME 5 OF 5



GENERAL NOTES

1- ALL DIMENSIONS ARE THE SAME P/S UNLESS OTHERWISE NOTED.
2- ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3- SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC ARE CLEAR OPENINGS.
4- FOR CUTTING ALL ACCESS OPENINGS IN GIRDERS, FLOORS, ETC, EXACT LOCATIONS WILL BE TAKEN FROM STRUCT. PLANS.
5- ALL VERTICAL LADDERS & LADDER RUNGS WILL BE MINIMUM 16" WIDE INSIDE STRINGERS AND RETURNS, RESPECTIVELY, UNLESS OTHERWISE NOTED.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-20-77	7 3,4,5	1- 'NO. 17' ADDED TO DEEP TANK - FR. 184-207 ABV. ALT. TO SUIT G.G. SHARP APPVL. LTR. DATED MAY 4, 1977 2- MANHOLES AND LADDERS RELOCATED TO SUIT MANHOLE LIST REFERENCE 10.	EDS	JLM JW J.L.G.

ABBREVIATIONS

ABV - ABOVE
A.O. - ACCESS OPENING
A.T. - AIR TIGHT
A ℞ - ABOVE BASELINE

BHD - BULKHEAD
BKT - BRACKET
B.L. - BASELINE

CTR - CENTER
℄ - CENTERLINE
C.O. - CARGO OIL
COAM - COAMING
CVK - CENTER VERTICAL KEEL
COND - CONDENSATE

D.B. - DOUBLE BOTTOM
DIA - DIAMETER
DK - DECK
DN - DOWN

E.M. - EXPANDED METAL
EX.STR. - EXTRA STRONG

FDN - FOUNDATION
F.O. - FUEL OIL
FR - FRAME
F.T. - FUME TIGHT
F.W. - FRESH WATER
FLR - FLOOR
F.O.B.P. - FLUSH O.T. BOLTED PLATE
F.W.B.P. - FLUSH W.T. BOLTED PLATE
FWD - FORWARD

G.T. - GAS TIGHT
GDR - GIRDER

H.W.M.H. - HINGED W.T. MANHOLE
H.O.M.H. - HINGED O.T. MANHOLE
H.N.M.H. - HINGED N.T. MANHOLE

INCL - INCLUDING

KNU - KNUCKLE

LONG - LONGITUDINAL
L.H. - LIGHTNING HOLE

MACHY - MACHINERY
M.H. - MANHOLE
MN. - MAIN

N.T. - NONTIGHT

OPNG - OPENING
O.T. - OIL TIGHT
O.T.F. - OIL TIGHT FLOOR

P/S - PORT & STARBOARD
℞ - PLATE

RES - RESERVATION
RAD - RADIUS
REF - REFERENCE
R.O.B.P. - RAISED O.T. BOLTED ℞
R.W.B.P. - RAISE W.T. BOLTED ℞

SPCG - SPACING
STBD - STARBOARD
STL - STEEL
S.W. - SALT WATER

TYP - TYPICAL

V.L. - VERTICAL LADDER

W.T. - WATER TIGHT
W.T.F. - WATER TIGHT FLOOR

- NUMBER

NO.	PLAN NO.	TITLE
13	129-01-13	TRANSV. SECTS. BHDS FR 157-170
12	372-00-01	STRUCT. SEA CHESTS - AFT FR. 157
11	232-00-05	VERTICAL LADDERS - INNERBOTTOM
10	144-00-02	MANHOLE LIST - AFT FR. 157
9	372-00-02	COND. SCOOP & MAIN COND OVBD DISCH
8	129-03-23	CVK & I.B. GIRDERS - FR 153 - AFT
7	129-03-19	INNERBOTTOM LONGL'S - FR. 153½ - AFT
6	129-03-10	AFT PEAK FRAMING - FR. 206-222
5	129-03-08	TRANSV. FLOORS - FR. 185-205
4	129-03-07	TRANSV. FLOORS - FR. 154-184
3	129-02-05	INNERBOTTOM PLTG. FR. 153 - AFT
2	111-10-08	GEN. ARRGT. - TANK TOP - FR. 153½ - AFT
1	H4650-111-10-03	GEN. ARRGT. INNERBOTTOM - FR. 114.27-153½

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 5 APRIL 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED J. L. Mullin
REVIEWED
APPROVED

PLAN NO. H4650-111-10-04
ALT. NO. 1²

GENERAL ARRANGEMENT INNERBOTTOM FRS. 153½-AFT

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-4-77				
A.B.S.					
U.S.C.G.	5-20-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE		
	ALTERATION	-	-	1²
	ENGINEERING DISTRIBUTION	4 6 7	4 6 7	7 26 7
MAIL	OWNERS	4		2
	AMERICAN BUREAU	3		3
	LLOYD'S R.S.			
	U.S.M.A.			
	U S NAVY			
	U.S.C.G.	3		3
	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	/		1
	AM. BU. INSP.			1
	LLOYD'S INSP.			
	U.S.M.A. INSP.			1
	U.S. NAVY INSP.			
	U.S.C.G. INSP.			1
	CDSCHAUB			1
OFFICE	HULL DRAFT.-21		[illegible]	1
	MACH. DRAFT.-22		[illegible]	2
	ELEC. DRAFT.-23		[illegible]	1
	OUTFIT. DRAFT.-25			
	ESTIMATING			
	21-ENGR(TFR)		[illegible]	1
MISC.	PRODUCTION (BCD)			
	ORDER DEPT.			
	JOINER CONT. YARD			
	TOTAL ENG'R. DIST.	11	4	18
	YARD DISTRIBUTION	/	4 6 7	7 28 77
YARD	[redacted] UAO-OFFICE			1
	[illegible]			1
	PIECE RATE-11			1
	TEST DEPARTMENT			
	QUALITY ASSURANCE			1
	[redacted] PLANNING		[illegible]	7
STRUCTURAL	GROUND ASSEMBLY			4
	35 DEPT			4
	P. McNAIR			1
	H. LEVY			1
	NO. WAY			
	NO. WAY			
	NO. WAY			
	NO. WAY			
	STRUCT. SUPER.			2
	OPTICAL DETAIL-46			2
	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP-52			
	OUTFIT. #1 PIER			1
	PIPE DRAFT.-52			2
	BOILER SHOP-58			1
	OUTSIDE MACH.-60			1
	Q-MAT'L			1
	ELECTRIC SHOP-70			
	SHEET MET. SHOP-74			
	COPPER SHOP-51			
	PAINT SHOP-75			1
	WELDING			
OTHER	MOLD LOFT-41			1
	BRACKET SHOP			
	TOTAL YARD DIST.	/	4	33

4650-51- ALT 1²

21.3 SQ.FT.

BUILDERS PLAN NO. H-4650- 111-10-04

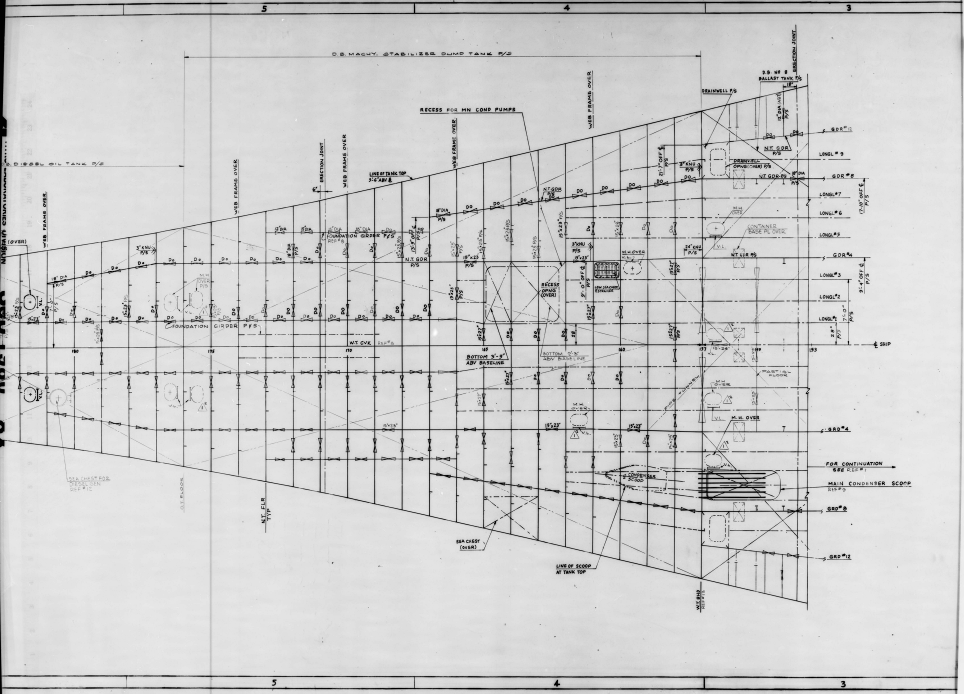
FRAME 1 OF 4

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

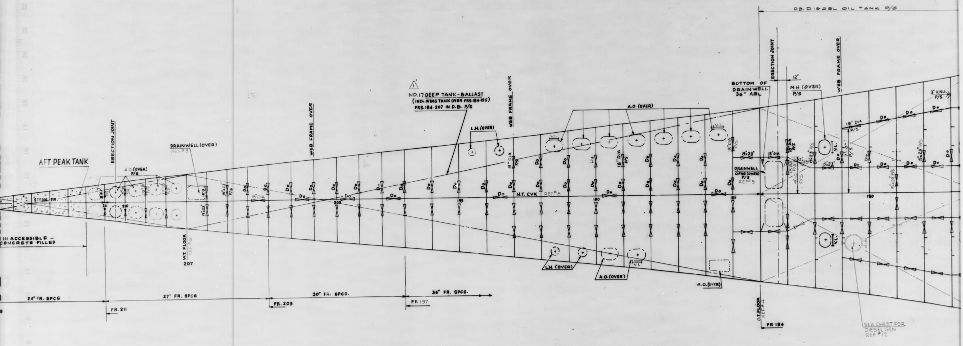
BUILDERS PLAN NO. H-4650- 111-10-04

FRAME 2 OF 4

GRAPHIC SERVICES 871-4181
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910



5
4
3
D.B. MACHY. STABILIZER DUMP TANK P/S
D.B. DIESEL OIL TANK P/S
D.B. Nº 8 BALLAST TANK P/S
ERECTION JOINT
18"
DRAINWELL P/S
RECESS FOR MN COND PUMPS
WEB FRAME OVER
LINE OF TANK TOP 5'-6" ABV. ℄
6"
N.T. GDR P/S
N.T. GDR-P/S
12" DIA (ABT) P/S
18" DIA
GDR #12
LONGL #9
GDR #8
LONGL #7
LONGL #6
LONGL #5
GDR #4
LONGL #3
LONGL #2
LONGL #1
℄ SHIP
17'-10" OFF ℄ P/S
9'-4" OFF ℄ P/S
7'-0" P/S
2'8" P/S
21'-7" OFF ℄ P/S
13'-9" OFF ℄ P/S
9'-0" OFF ℄ P/S
3" KNU P/S
24" KNU P/S
DRAINWELL OPNG (OVER) P/S
M.H. OVER
CONTAINER BASE PL OVER
W.T. GDR P/S
V.L.
12" DIA
15" DIA
FOUNDATION GIRDER P&S REF #8
15"x23" P/S
15"x27" P/S
DO
M.H. OVER V.L.
LOW SEA CHEST & STRAINER
RECESS OPNG (OVER)
(OVER)
FOUNDATION GIRDER P&S
W.T. CVK REF #8
BOTTOM 3'-9" ABV BASELINE
BOTTOM 2'-3" ABV BASELINE
28
180
175
170
165
160
157
155
153
PARTIAL FLOOR
PIPE TUNNEL
GRD #4
FOR CONTINUATION SEE REF #1
MAIN CONDENSER SCOOP REF #9
℄ CONDENSER SCOOP
GRD #8
GRD #12
SEA CHEST FOR DIESEL GEN REF #12
O.T. FLOOR
N.T. FLR TYP
SEA CHEST (OVER)
LINE OF SCOOP AT TANK TOP
W.T. BHD REF #13


8
7
6
D.B. DIESEL OIL TANK P/S
NO. 17 DEEP TANK-BALLAST
(INCL. WING TANK OVER FRS 184-195)
FRS. 184-207 IN D.B. P/S
AFT PEAK TANK
ERECTION JOINT
A.O. (OVER) P/S
DRAINWELL (OVER) REF#3
L.H. (OVER)
WEB FRAME OVER
A.O. (OVER)
V.L.
BOTTOM OF DRAINWELL 36" ABL
ERECTION JOINT
12"
MH (OVER) P/S
WEB FRAME OVER.
3" KNU. P/S
18" DIA P/S
7'-0" P/S
4'-0" P/S
15"x23" P/S
DRAINWELL OPNG (OVER) P/S REF#3
STERN FR.
211
210
200
195
190
185
180
15" DIA P/S
18" DIA P/S
18" DIA
15"x23"
Do
N.T. CVK REF#8
IN ACCESSIBLE - CONCRETE FILLED
W.T. FLOOR REF#6
207
L.H. (OVER)
A.O. (OVER)
A.O. (OVER)
O.T. FLOOR REF#4
SEA CHEST FOR DIESEL GEN REF#12
24" FR. SPCG
27" FR. SPCG
30" FR. SPCG.
36" FR. SPCG.
FR. 211
FR. 203
FR 197
FR 184
8
7
6

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

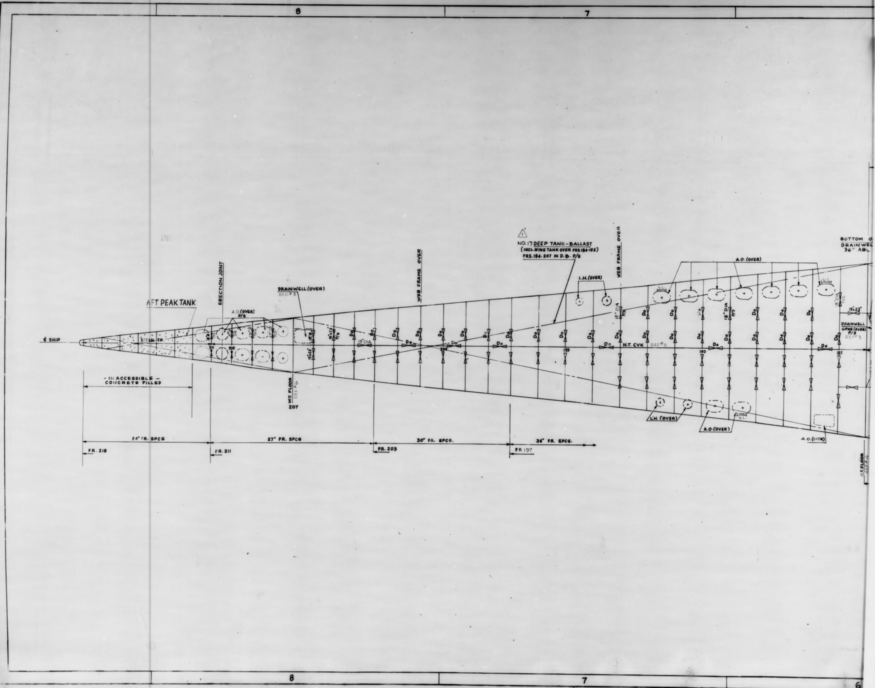
BUILDERS PLAN NO. H-4650-111-10-04

FRAME 3 OF 4

BUILDERS PLAN NO. H-4650-111-10-04

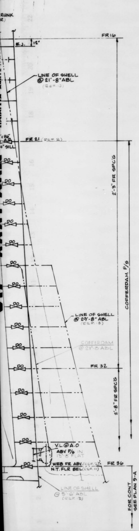
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

FRAME 4 OF 4


8
7
6
AFT PEAK TANK
ERECTION JOINT
A.O. (OVER) P/S
DRAINWELL (OVER) REF #3
WEB FRAME OVER
⚠1
NO. 17 DEEP TANK - BALLAST
(INCL. WING TANK OVER FRS 184-195)
FRS. 184-207 IN D.B. P/S
L.H. (OVER)
WEB FRAME OVER
A.O. (OVER)
V.L.
BOTTOM O
DRAINWEL
36" ABL
℄ SHIP
STERN FR.
8"ø
211
210
18"ø
15"x23"
15"x23" P/S
Do
18" DIA
200
195
15" DIA P/S
N.T. CVK REF #8
18" DIA P/S
190
185
15"x23"
DRAINWELL OPNG (OVER) P/S REF #3
- INACCESSIBLE -
CONCRETE FILLED
W.T. FLOOR REF #6
207
L.H. (OVER)
A.O. (OVER)
A.O. (OVER)
24" FR. SPCG
27" FR. SPCG
30" FR. SPCG.
36" FR. SPCG.
FR. 218
FR. 211
FR. 203
FR 197
O.T. FLOOR REF #4

BUILDERS PLAN NO. H-4650-111-10-05

FRAME 1 OF 5

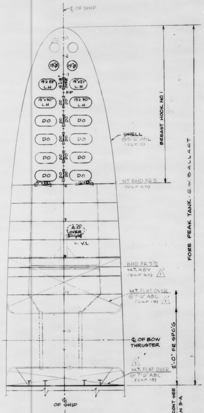

RUNK
R)
FR16
E.J.
12"
LINE OF SHELL
@ 21'-8" ABL
(REF. 13)
x36"
A.O.
4" SILL
FR 21 (REF. 2)
DO
2'-3" FR SPC'G
COFFERDAM P/S
LINE OF SHELL
@ 29'-8" ABL
(REF. 13)
COFFERDAM
@ 21'-8 ABL
FR 32
2'-8" FR SPC'G
V.L @ A.O
ABV P/S IN
13'-8" FLAT
WEB FR ABV (REF. 2)
N.T. FLR BEL (REF. 11)
FR 36
LINE OF SHELL
@ 5'-6" ABL
(REF. 13)
FOR CONT
SEE PLAN 5-A

ABBREVIATIONS

ABV - ABOVE
AFT. - AFTER
BEL. - BELOW
BHD - BULKHEAD
B.L. - BASE LINE
℄ - CENTERLINE
CONT. - CONTINUATION
E.J. - ERECTION JOINT
L.R. - LADDER RUNG
RE.W.T.M.H. - RECESSED WATER TIGHT MAN HOLE
FLR. - FLOOR
FWD - FORWARD
F.W.B.P.M.H. - FLUSH WATER TIGHT BOLTED PLATE MANHOLE
O.T. - OIL TIGHT
P/S - PORT & STARBOARD
STBD. - STARBOARD
W.T. - WATER TIGHT
V.L. - VERTICAL LADDER
A.O. @ H.C.P. - ACCESS OPENING WITH HINGED COVER PLATE
ABL - ABOVE BASELINE

GENERAL NOTES:

1. STBD. SIDE DETAILED - PORT SIDE SIMILAR TO OPPOSITE HAND EXCEPT AS NOTED.


℄ OF SHIP
3
2
15"Ø
15"Ø
1
15"x23" L.H.
15"x18" OVER
15"x23" L.H.
FP
15"x30" L.H
15"x30" L.H
DO
BREAST HOOK NO 1
SHELL
@ 5'-6" ABL
(REF. 13)
15"x23"
NT BHD FR 5
(REF. 20)
5
7
A.O OVER
V.L
9
BHD FR 9½
W.T. ABV
(REF. 20)
1
W.T. FLAT OVER
@ 7'-6" ABL
(REF. 13)
11
13
℄ OF BOW THRUSTER
15
FORE PEAK TANK - S.W. BALLAST
2'-0" FR SPC'G
℄ OF SHIP
FOR CONT SEE PLAN 3-A

PLAN 2-A
FR 16 FWD

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	6/23/77	2 7 7 & 10 6 & 11	1) IN PLAN "2-A" REVISED TRANSV. BHD. AT FR. 9½ AND FLATS BETWEEN FRS. 9-12 & 15-16 TO W.T. IN LIEU OF O.T. 2) IN PLAN "7-A" INDICATED INBD. LONG'L BHD. IN WAY OF WING TANKS NOS. 3 & 4 AS O.T. P/S. ABV. ALT'S. IN ACCORDANCE WITH G.G. SHARP APP'L. LTR. DATED MAY 4, 1977 3) IN PLANS "7-A" & "10-A" REVISED TYPE OF BHDS. AS FOLLOWS: BHD. 71 FROM O.T. TO W.T. BHD. 61 FROM O.T. TO W.T. & O.T. ABV. ALT. 1³ TO SUIT U.S.C.G. APP'L. LTR. DATED 5-20-77. 4) IN REFERENCE COLUMN REVISED ITEM Nº 21 & ADDED ITEM Nº 23 5) IN PLAN VIEWS "7-A" & "10-A" REVISED LOCATIONS OF MANHOLES TO AGREE WITH ADDED REF. # 24	R L W CDS	9/21/77
2.	7-24-80	7	1. MANHOLES FRS 45-46 RELOCATED TO FRS. 47-48.	CDS	KM

NO.	PLAN NO.	TITLE
24	144-00-01	MANHOLE LIST FWD. FR. 157
23	129-01-06	TRANSV. BHDS. FRS. 69 & 77
22	129-06-30	LAYOUT & DETAILS OF DOUBLER PLTS. ON DKS & FLATS
21	129-01-04	TRANSV. O.T. & W.T. BHD. # 61
20	129-03-30	FOREPEAK FRAMING FRS - 4 TO 9½
19	129-03-01	FOREPEAK FRAMING LONGLS & FLATS FR 16½ FWD
18	232-00-06	VERT. LADDERS ABV INNERBOT. FR 153½ FWD
17	232-00-09	INCL. LADDERS IN CARGO HOLDS NO 1, 2, 3, 4 & 8
16	141-00-01	DOOR SCHEDULE
15	129-06-06	DETAILS - STOPS & REMOTE CONTROL
14	129-06-02	ARRGT. - CONVERT GUIDES HOLD # 2, 3, 4 & 8, SHT 1 OF 2
13	129-05-01	SHELL EXPANSION - FR 77 - FWD.
12	129-03-04	TRANSV. FLOORS - FR. 46-77
11	129-03-03	TRANSV. FLOORS - FR. 17-45
10	129-02-49	21'-8" FLAT FR 16-77
9	129-02-20	MAIN DK. PLTG & GIRDERS - FWD. FR. 77
8	129-02-01	INNERBOTTOM PLTG FR 77½ - FWD.
7	129-01-36	C.O. TANKS - FR 77½ FWD.
6	129-01-22	LONG'L BHDS. - BELOW 2ND DK. FR 77½ - FWD
5	129-01-05	TRANSV. SECTIONS BHDS & FRMG, FR 62-76
4	129-01-03	TRANSV. SECTIONS - FR. 46-60
3	129-01-02	TRANSV. SECTIONS - FR. 37-45 & BHD FR 45
2	129-01-01	TRANSV. SECTIONS - FR. 17-25 (M.37)
1	H4650-111-10-06	GEN. ARRGT. TANK TOP - FR 77½ - 114.27

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 6 APRIL 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED T. L. Muller
REVIEWED
APPROVED R. C. Jackson

PLAN NO. H4650-111-10-05
ALT. NO. 2

GENERAL ARRANGEMENT TANK TOP FRS. 77½-FWD.

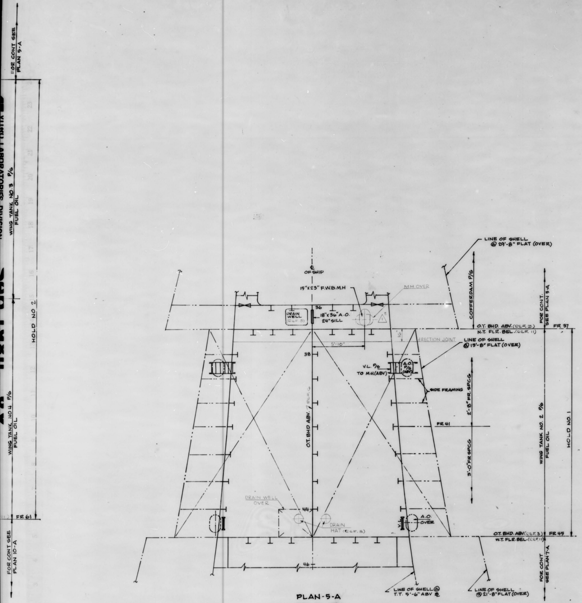
	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-4-77				
A.B.S.					
U.S.C.G.	5-20-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE			
	ALTERATION	–	–	1	2
	ENGINEERING DISTRIBUTION	4/6/77	4/6/77	7/26/77	7/28/80
MAIL	OWNERS	4		2	4
	AMERICAN BUREAU	3		3	
	LLOYD'S R.S.				
	U.S.M.A.				
	U S NAVY				
	U.S.C.G.	3		3	
	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1		1	
	AM. BU. INSP.			1	
	LLOYD'S INSP.				
	U.S.M.A. INSP.			1	
	U.S. NAVY INSP.				
	U.S.C.G. INSP			1	
	CD SCHAUB			1	
OFFICE	HULL DRAFT. - 21			1	1
	MACH. DRAFT. - 22			2	
	ELEC. DRAFT. - 23			1	
	OUTFIT. DRAFT. - 25				
	ESTIMATING				
	ENGR. (CEAB)			1	
MISC.	PRODUCTION (BCO)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	2	18	5
	YARD DISTRIBUTION		4/6/77	7/28/77	
YARD	LAD OFFICE			1	
	GEO.			1	
	PIECE RATE - 11			1	
	TEST DEPARTMENT				
	QUALITY ASSURANCE			1	
	PLANNING			7	
STRUCTURAL	GROUND ASSEMBLY			7	
	35 DEPT			4	
	P. McNAIR			1	
	H. LEVY			1	
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.			2	
	OPTICAL DETAIL - 46			2	
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
	OUTFIT. #1 PIER			1	
	PIPE DRAFT. - 52			2	
	BOILER SHOP - 58			1	
	OUTSIDE MACH. - 60			1	
	Q-MAT'L			1	
	ELECTRIC SHOP - 70				
	SHEET MET. SHOP - 74				
	COPPER SHOP - 51				
	PAINT SHOP - 78			1	
OTHER	WELDING				
	MOLD LOFT - 41			1	
	BRACKET SHOP				
	TOTAL YARD DIST.		4	38	

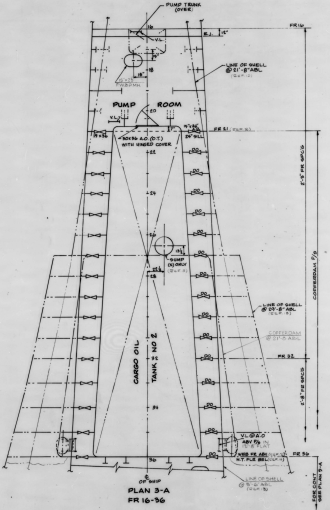
4650 S/1 - ACT. 15

H-5

27.5 SQ. FT.


FOR CONT SEE PLAN 9-A
WING TANK NO 3 P/S FUEL OIL
HOLD NO 2
WING TANK NO 4 P/S FUEL OIL
FR 61
FOR CONT SEE PLAN 10-A
LINE OF SHELL @ 29'-8" FLAT (OVER)
℄ OF SHIP
15"x23" F.W.B.M.H
M.H OVER
DRAIN WELL
18"x36" A.O. 24" SILL
COFFERDAM P/S
O.T. BHD. ABV.
N.T. FLR. BEL.
FOR CONT. SEE PLAN 3-A
FR 37
ERECTION JOINT
5'-10"
LINE OF SHELL @ 13'-8" FLAT (OVER)
V.L. P/S TO M.H.(ABV)
A.O. P/S (ABV)
SIDE FRAMING
2'-8" FR. SPCG
O.T. BHD ABV.
FR 41
3'-0" FR SPCG
WING TANK NO. 2 P/S FUEL OIL
HOLD NO. 1
DRAIN WELL OVER
DRAIN HAT
A.O. OVER
O.T. BHD. ABV.
W.T. FLR. BEL.
FR 45
FOR CONT SEE PLAN 7-A
LINE OF SHELL @ T.T. 5'-6" ABV ℄
LINE OF SHELL @ 21'-8" FLAT (OVER)
36
38
44
46

PLAN-5-A
FRS. 36-45

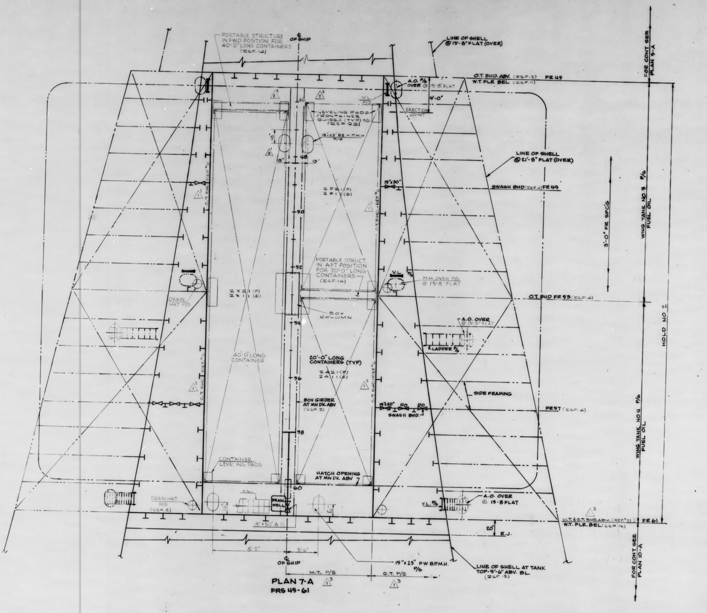

PUMP TRUNK (OVER)
FR 16
E.J.
12"
V.L.
15"x23" F.W.B.M.H.
18"
LINE OF SHELL @ 21'-8" ABL
PUMP ROOM
V.L.
15"x36"
30x36 A.O.(O.T.) WITH HINGED COVER
15"x36" A.O. 24" SILL
FR 21
2'-3" FR SPCG
SUMP (S) ONLY
COFFERDAM P/S
LINE OF SHELL @ 29'-8" ABL
COFFERDAM @ 21'-8 ABL
CARGO OIL
TANK NO 2
FR 32
2'-8" FR SPCG
V.L @ A.O ABV P/S IN 13'-8 FLAT
WEB FR ABV.
N.T. FLR BEL
FR 36
LINE OF SHELL @ 5'-6" ABL
FOR CONT SEE PLAN 5-A
℄ OF SHIP
16
18
20
22
24
26
28
32
34
36

PLAN 3-A
FR 16-36

BUILDERS PLAN NO. H-4650-111-10-05

FRAME 2 OF 5

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

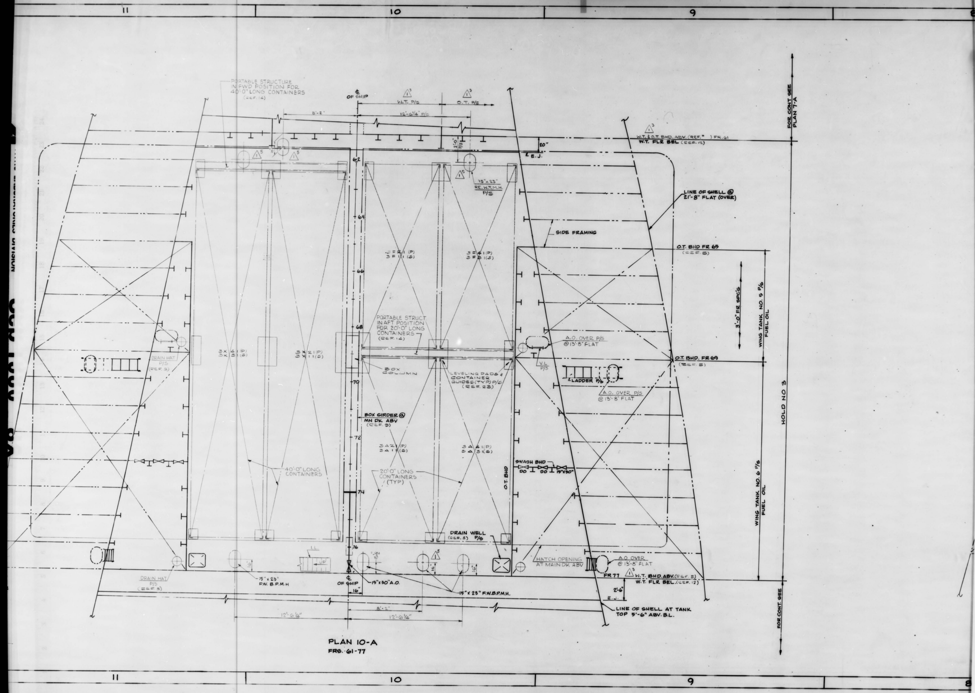

PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS (REF. 14)
℄ OF SHIP
LINE OF SHELL @ 13'-8" FLAT (OVER)
O.T. BHD. ABV. (REF. 3) FR 45
W.T. FLR BEL (REF. 11)
A.O. P/S OVER @ 13'-8" FLAT
V.L. P/S
4'-0"
ERECTION JOINT
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF. 23)
15"x23" RE. W.T.M.H P/S
18"
46
48
15"
15"
LINE OF SHELL @ 21'-8" FLAT (OVER)
15"x30"
SWASH BHD (REF. 4) FR 49
2 F 2 1 (P)
2 F 1 1 (S)
O.T. BHD. REF. #6
50
52
3'-0" FR SPC'G
WING TANK NO 3 P/S FUEL OIL
FOR CONT SEE PLAN 9-A
PORTABLE STRUCT. IN AFT POSITION FOR 20'-0" LONG CONTAINERS (REF. 14)
V.L.
M.H. OVER P/S @ 13'-8" FLAT
O.T. BHD FR 53 (REF. 4)
2 X 2 1 (P)
2 X 1 1 (S)
DRAIN HAT P/S
BOX COLUMN
54
A.O. OVER @ 13'-8" FLAT
LADDER P/S
HOLD NO 2
40'-0" LONG CONTAINER
20'-0" LONG CONTAINERS (TYP)
2 A 2 1 (P)
2 A 1 1 (S)
56
SIDE FRAMING
BOX GIRDER AT MN DK ABV (REF. 9)
15"x30"
DO
DO
SWASH BHD.
FR 57 (REF. 4)
WING TANK NO 4 P/S FUEL OIL
58
CONTAINER LEVELING PADS
HATCH OPENING AT MN DK ABV
60
DRAIN HAT P/S (REF. 8)
V.L.
DRAIN WELL
16"
16"
A.O. OVER @ 13-8 FLAT
V.L. P/S
W.T. & O.T. BHD. ABV. (REF. 21) FR 61
W.T. FLR. BEL (REF. 12)
15"x30" A.O.
20"
E.J.
8'-2"
3'-6"
℄ OF SHIP
15"x23" FW B.P.M.H. P/S
LINE OF SHELL AT TANK TOP-5'-6" ABV. B.L. (REF. 13)
W.T. P/S
O.T. P/S
FOR CONT SEE PLAN 10-A

PLAN 7-A
FRS 45-61

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-05

FRAME 3 OF 5

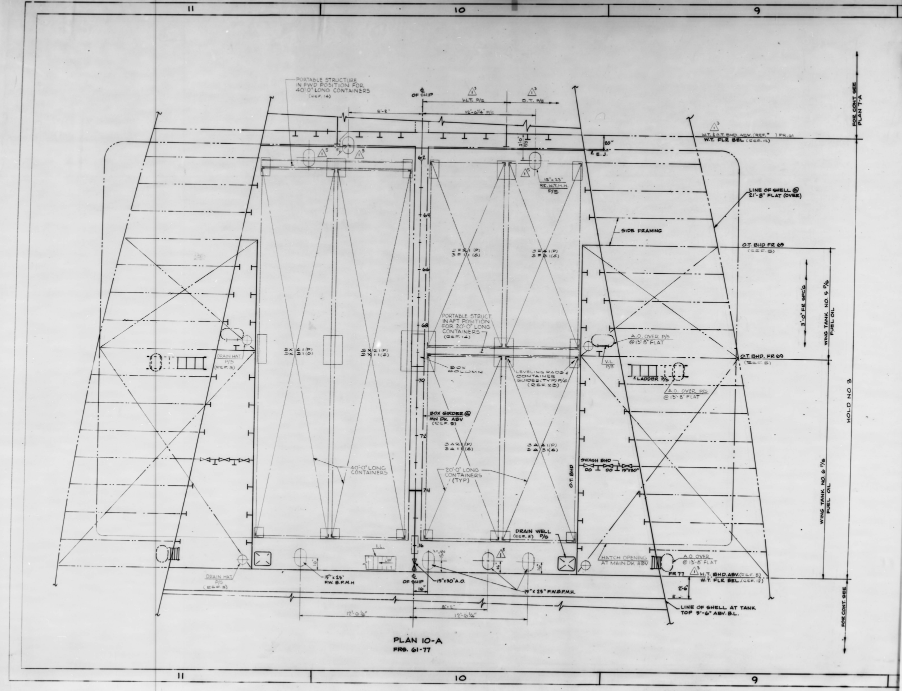

11
10
9
8
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS (REF. 14)
℄ OF SHIP
W.T. P/S
O.T. P/S
8'-2"
12'-6¼" P/S
3'-0" P/S
20"
℄ E.J.
W.T. & O.T. BHD. ABV. (REF.) FR. 61
W.T. FLR BEL (REF. 12)
FOR CONT. SEE PLAN 7-A
15"x23" RE. W.T.M.H. P/S
62
64
66
68
70
72
74
76
LINE OF SHELL @ 21'-8" FLAT (OVER)
SIDE FRAMING
O.T. BHD FR 65 (REF. 5)
3 F 2 1 (P)
3 F 1 1 (S)
3 F 4 1 (P)
3 F 3 1 (S)
3'-0" FR SPC'G
WING TANK NO. 5 P/S FUEL OIL
PORTABLE STRUCT IN AFT POSITION FOR 20'-0" LONG CONTAINERS (REF. 14)
3 X 4 1 (P)
3 X 3 1 (S)
3 X 2 1 (P)
3 X 1 1 (S)
DRAIN HAT P/S (REF. 8)
BOX COLUMN
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF. 23)
A.O. OVER P/S @ 13'-8" FLAT
V.L P/S
℄ LADDER P/S
A.O. OVER P/S @ 13'-8" FLAT
O.T. BHD. FR 69 (REF. 5)
HOLD NO 3
BOX GIRDER @ MN DK. ABV (REF. 9)
3 A 2 1 (P)
3 A 1 1 (S)
3 A 4 1 (P)
3 A 3 1 (S)
40'-0" LONG CONTAINERS
20'-0" LONG CONTAINERS (TYP)
O.T. BHD
SWASH BHD
DO
DO
15"x30"
WING TANK NO. 6 P/S FUEL OIL
DRAIN WELL (REF. 8) P/S
I.L.
UP
15½"
16"
HATCH OPENING AT MAIN DK ABV
A.O. OVER @ 13'-8" FLAT
FR 77
W.T. BHD. ABV. (REF. 5)
W.T. FLR BEL. (REF. 12)
DRAIN HAT P/S (REF. 8)
15"x23" F.W. B.P.M.H
℄ OF SHIP
15"x30" A.O.
16"
15"x23" F.W.B.P.M.H.
2'-6"
E.J.
LINE OF SHELL AT TANK TOP 5'-6" ABV. B.L.
8'-2"
12'-6¼"
12'-6¼"
FOR CONT. SEE

PLAN 10-A
FRS. 61-77

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-05

FRAME 4 OF 5


11
10
9
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS (REF. 14)
℄ OF SHIP
W.T. P/S
O.T. P/S
8'-2"
12'-6¼" P/S
3'-0" P/S
20"
℄ E.J.
15"x23" RE. W.T.M.H. P/S
W.T. & O.T. BHD. ABV. (REF.) FR. 61
W.T. FLR BEL (REF. 12)
FOR CONT SEE PLAN 7-A
LINE OF SHELL @ 21'-8" FLAT (OVER)
SIDE FRAMING
O.T. BHD FR 65 (REF. 5)
3'-0" FR SPC'G
WING TANK NO. 5 P/S FUEL OIL
O.T. BHD. FR 69 (REF. 5)
A.O. OVER P/S @ 13'-8" FLAT
V.L P/S
℄ LADDER P/S
A.O. OVER P/S @ 13'-8" FLAT
HOLD NO 3
62
64
66
68
70
72
74
76
3B21(P) 3B11(S)
3B41(P) 3B31(S)
3X41(P) 3X31(S)
3X21(P) 3X11(S)
PORTABLE STRUCT IN AFT POSITION FOR 20'-0" LONG CONTAINERS (REF. 14)
BOX COLUMN
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF. 23)
DRAIN HAT P/S (REF. 8)
BOX GIRDER @ MN DK ABV (REF. 9)
3A21(P) 3A11(S)
3A41(P) 3A31(S)
40'-0" LONG CONTAINERS
20'-0" LONG CONTAINERS (TYP)
O.T. BHD
SWASH BHD
DO
DO
15"x30"
WING TANK NO. 6 P/S FUEL OIL
DRAIN WELL (REF. 8) P/S
HATCH OPENING AT MAIN DK ABV
A.O. OVER @ 13'-8" FLAT
FR 77
W.T. BHD. ABV. (REF. 5)
W.T. FLR BEL. (REF. 12)
2'-6"
E.J.
LINE OF SHELL AT TANK TOP 5'-6" ABV. B.L.
FOR CONT. SEE
I.L.
UP
16"
15½"
15"x23" F.W. B.P.M.H
℄ OF SHIP
15"x30" A.O.
15"x23" F.W.B.P.M.H.
DRAIN HAT P/S (REF. 8)
12'-6¼"
8'-2"
12'-6¼"

PLAN 10-A
FRS. 61-77

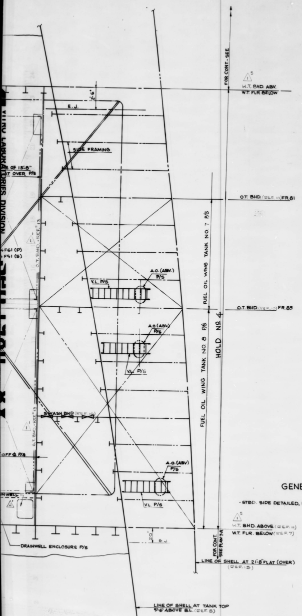
BUILDERS PLAN NO. H-4650-111-10-05

FRAME 5 OF 5

BUILDERS PLAN NO. H-4650-111-10-06

FRAME 1 OF 6

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910



ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	7/5/77	3,5	1) IN PLAN "4-A" INDICATED LONG'L BHD. 26'-4" OFF ℄ AS A "O.T." BHD. P/S		
		10	2) IN PLAN "10-A" NOTED TYPE OF MANHOLE 12'-6¼" OFF ℄ AT FR. 110 P/S.		
		12,13 14	3) IN PLAN "13-A" CHANGED TYPE OF TRANSV. BHD. 114.27 (M-27) FROM "O.T." TO "W.T." ABV. ALTERATIONS 1¹ THRU 1³ IN ACCORDANCE WITH G. SHARP APP'L. LTR. DATED 5-4-77.	R. L. W.	
		3,4,6 7,10,11 13,14	4) IN PLAN "4-A", "7-A", "10-A" & "13-A" REVISED LOCATION & TYPE OF MANHOLES & IN PLAN "10-A" ADDED MANHOLE 3'-6" OFF ℄ TO PORT & 2'-0" AFT BHD. 109 ABV. TO AGREE WITH MANHOLE LIST REF. #17		TLM
		2 THRU 14	5) IN PLANS "4-A", "7-A", "10-A" & "13-A" REVISED TYPE OF TRANSV. BHDS. 77, 93, 109, 114.11 (M-11) & 114.27 (M-27) FROM "O.T." TO "W.T." ABV. ALT. TO SUIT U.S.C.G. APP'L. LETTER DATED 5-20-77	CDS	JW 7/5/77
2.	7-24-80	3,5,6 8,9,11 13,14	1. COAMINGS AROUND DRAIN-WELLS DELETED.		
		3-4	2- MANHOLES 12'-6¼" & 18'-10⅝" OFF ℄, 15" AFT FR. 77, RELOCATED TO 18" AFT FR. 79, P&S.	CDS	7/28/80 TLM

ABBREVIATIONS

ABV. - ABOVE
AFT. - AFTER
BHD. - BULKHEAD
B.L. - BASELINE
℄ - CENTERLINE
CONT. - CONTINUATION
E.J. - ERECTION JOINT
I.L. - INCLINED LADDER
M.H. - MANHOLE
A.O. - ACCESS OPENING
FLR. - FLOOR
FWD. - FORWARD
F.W.B.P.M.H. - FLUSH WATERTIGHT BOLTED PLATE MANHOLE
O.T. - OIL TIGHT
P/S - PORT & STARBOARD
STBD. - STARBOARD
W.T. - WATERTIGHT
V.L. - VERTICAL LADDER
RE. - RECESS.

GENERAL NOTES

- STBD. SIDE DETAILED, PORT SIDE SIMILAR TO OPPOSITE HAND EXCEPT AS NOTED

NO.	PLAN NO.	TITLE
21	129-06-30	LAYOUT & DETAILS OF DOUBLER PLTS ON DKS & FLATS
20	129-01-52	TRANS. SECTS. FR 110-114.42 (M-42)
19	129-06-07	ARRGT. FIXED GUIDES - HOLDS 1, 5, 5A, 5B, 5C, 6 & 7
18	129-06-03	CONVERT. GUIDE ARRGT. HOLDS 4 & 8
17	144-00-01	MANHOLE LIST - FWD. FR. 157
16	232-00-12	INCLINED LADDERS BEL. MN. DK. FR 157-FWD.
15	129-02-16	FLATS & STRGS. BELOW 2ND DK. FR. 77-114.12 (M-12)
14	129-01-46	LONG'L BHDS. FR. 109-114.43 (M-43)
13	129-01-23	LONG'L BHDS. FR. 77½-109
12	129-01-10	TRANSV. SECTIONS - FR. 114.44 (M-44) - 141
11	129-01-09	TRANSV. SECTIONS - FR. 94-108
10	129-01-08	TRANSV. SECTION BHDS, FRS, & STANS. FR. 78-92
9	129-01-07	TRANSV. SECTIONS - FR. 114.11 - 114.43 (M-43)
8	129-03-24	TRANSV. FLOORS - FRS. 110-114.43 (M-43)
7	129-03-05	TRANSV. FLOORS - FR. 78-109
6	129-02-03	INNERBOTTOM PLTG. FR. 109-114.43 (M-43)
5	129-02-02	INNERBOTTOM PLTG. FR. 77½-109
4	129-05-02	SHELL EXPANSION - FR. 109-114.43 (M-43)
3	129-05-01	SHELL EXPANSION - FR. 77-FWD.
2	111-10-07	GEN. ARRGT. TANK TOP - FR. 114.27 (M-27) - 153½
1	H4650-111-10-05	GEN. ARRGT. TANK TOP - FR. 77½ - FWD

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DRAWN C/B.S
CHECKED
REVIEWED
DATE 5 APRIL 1977
IN CHARGE
EXAMINED T. L. Mollis
APPROVED

PLAN NO. H4650-111-10-06 **ALT. NO.** 2²

GENERAL ARRANGEMENT TANK TOP FRS. 77½-114.27 (M-27)

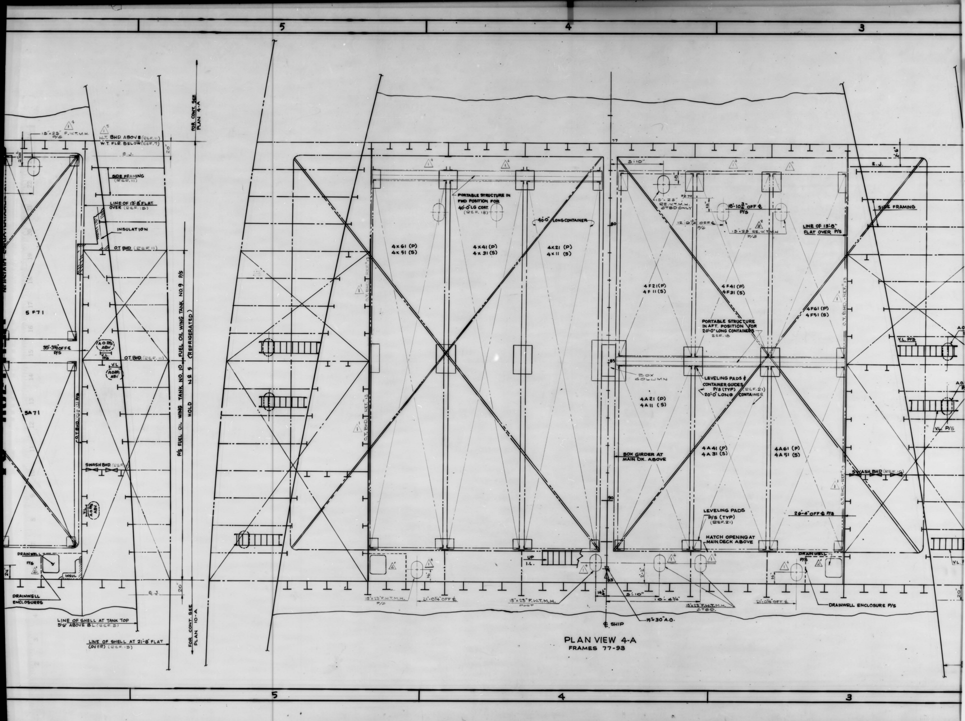
APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-4-77				
A.B.S.					
U.S.C.G.	5-20-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE			
	ALTERATION	-	-	1²	2
	ENGINEERING DISTRIBUTION	4-6-77	4-6-77	7-26-77	7-28-80
MAIL	OWNERS	4		2	6
MAIL	AMERICAN BUREAU	3		3	
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U.S. NAVY				
MAIL	U.S.C.G.	3		3	
MAIL	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1		1	
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.			1	
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CDSchaob			1	
OFFICE	HULL DRAFT. - 21		[illegible]	1	1
OFFICE	MACH. DRAFT. - 22		[illegible]	2	
OFFICE	ELEC. DRAFT. - 23		[illegible]	1	
OFFICE	OUTFIT. DRAFT. - 25				
OFFICE	ESTIMATING				
OFFICE	[illegible]		[illegible]	1	
MISC.	PRODUCTION (BCD)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	4	18	5
	YARD DISTRIBUTION	/	4-6-77	7-28-77	
YARD	YARD OFFICE			1	
YARD	GEO. [illegible]			1	
YARD	PIECE RATE - 11			1	
YARD	TEST DEPARTMENT				
YARD	QUALITY ASSURANCE			1	
YARD	PLANNING		[illegible]	7	
STRUCTURAL	GROUND ASSEMBLY			4	
STRUCTURAL	35 DEPT.			4	
STRUCTURAL	P. McNAIR			1	
STRUCTURAL	H. LEVY			1	
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.			2	
STRUCTURAL	OPTICAL DETAIL-46			2	
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			2	
MACH'Y & OUTFIT.	BOILER SHOP - 58			1	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			1	
MACH'Y & OUTFIT.	Q-MAT'L			1	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 51				
MACH'Y & OUTFIT.	PAINT SHOP - 78			1	
OTHER	WELDING				
OTHER	MOLD LOFT - 41			1	
OTHER	BRACKET SHOP				
	TOTAL YARD DIST.	/	4	32	

4650-51-ALT-15

H-6

36.3 SQ.FT.


5
4
3
15"×23" F.W.T.M.H. P/S
W.T. BHD ABOVE (REF. 11)
W.T. FLR. BELOW (REF. 7)
E.J.
20"
SIDE FRAMING (REF. 11)
LINE OF 13'-8" FLAT OVER (REF. 13)
INSULATION
O.T. BHD. (REF. 11)
5F71
35'-3½" OFF ℄ P/S
A.O. P/S ABV
V.L. P/S
A.O. P/S ABV
V.L.
5A71
O.T. BHD (REF. 13) P/S
SWASH BHD. (REF. 10)
DRAINWELL P/S
INSUL
24"
DRAINWELL ENCLOSURES
LINE OF SHELL AT TANK TOP 5'-6" ABOVE B.L. (REF. 5)
LINE OF SHELL AT 21'-8" FLAT (OVER) (REF. 13)
FOR CONT. SEE PLAN 4-A
FOR CONT. SEE PLAN 10-A
P/S FUEL OIL WING TANK NO. 10, FUEL OIL WING TANK NO. 9 P/S
HOLD Nº 5 (REFRIGERATED)
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LG CONT. (REF. 18)
40'-0" LONG CONTAINER
4×61 (P)
4×51 (S)
4×41 (P)
4×31 (S)
4×21 (P)
4×11 (S)
O.T. BHD.-REF. 13
77
80
85
90
93
5'-10"
18"
15"×23" RE.W.T.M.H. STBD ONLY
FR. 79
18'-10¾" OFF ℄ P/S
12'-6¼" OFF ℄ P/S
15"×23" RE.W.T.M.H. P/S
LINE OF 13'-8" FLAT OVER P/S
2'-6"
E.J.
SIDE FRAMING
4F21 (P)
4F11 (S)
4F41 (P)
4F31 (S)
4F61 (P)
4F51 (S)
PORTABLE STRUCTURE IN AFT. POSITION FOR 20'-0" LONG CONTAINERS REF. 18
BOX COLUMN
LEVELING PADS & CONTAINER GUIDES P/S (TYP) (REF. 21)
20'-0" LONG CONTAINER
4A21 (P)
4A11 (S)
4A41 (P)
4A31 (S)
4A61 (P)
4A51 (S)
BOX GIRDER AT MAIN DK. ABOVE
V.L. P/S
A.O.
SWASH BHD (REF. 10)
LEVELING PADS P/S (TYP) (REF. 21)
HATCH OPENING AT MAIN DECK ABOVE
26'-4" OFF ℄ P/S
DRAINWELL P/S
UP I.L.
15"×23" F.W.T.M.H. P/S
21'-0¼" OFF ℄
15"×23" F.W.T.M.H. PORT
14¾"
5'-10"
10'-4¾"
2'-2"
16"
15"×23" F.W.T.M.H. STBD.
21'-0¼" OFF ℄
DRAINWELL ENCLOSURE P/S
℄ SHIP
15"×30" A.O.
20"

PLAN VIEW 4-A
FRAMES 77-93

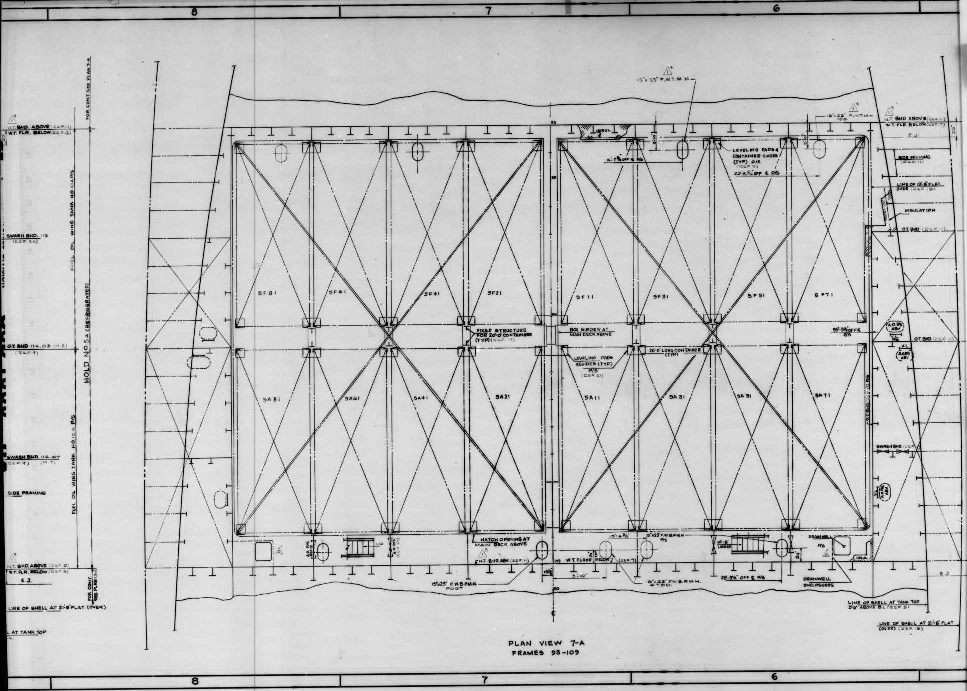
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-06

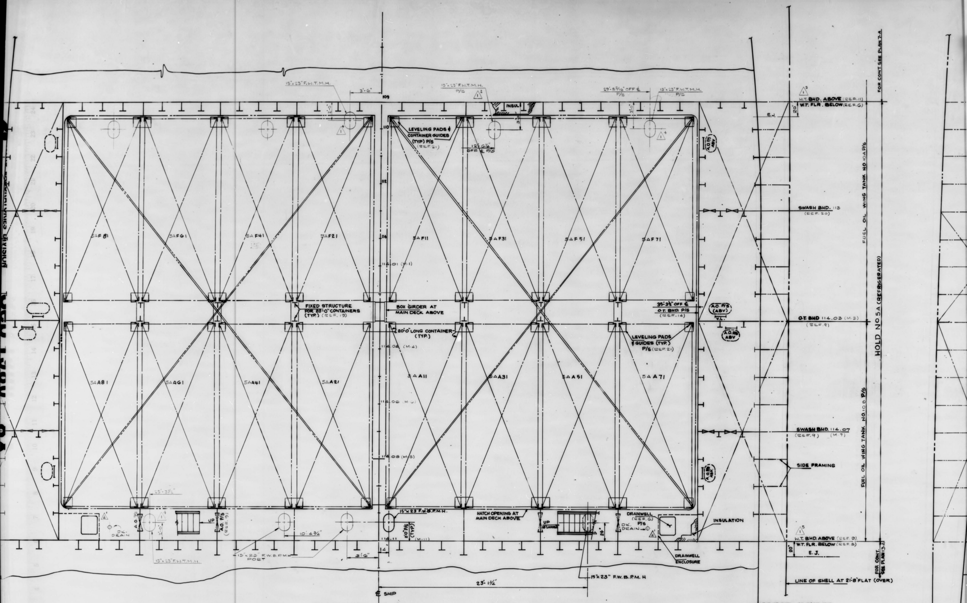
FRAME 2 OF 6

BUILDERS PLAN NO. H-4650-111-10-06

FRAME 3 OF 6


8
7
6
FOR CONT SEE PLAN 7-A
W.T. BHD. ABOVE (REF.11)
W.T. FLR. BELOW (REF.6)
20
SWASH BHD. 113
(REF. 20)
FUEL OIL WING TANK NO.10A P/S
HOLD NO 5A (REFRIGERATED)
O.T. BHD 114.03 (M.3)
(REF.9)
SWASH BHD. 114.07
(REF.9) (M.7)
SIDE FRAMING
FUEL OIL WING TANK NO.10B P/S
W.T. BHD. ABOVE (REF.9)
W.T. FLR. BELOW (REF.8)
E.J.
FOR CONT. SEE PLAN 13-A
LINE OF SHELL AT 21'-8" FLAT (OVER)
L AT TANK TOP
15"x23" F.W.T.M.H.
15"x23" F.W.T.M.H. P/S
93
INSUL
2'-10"
11'-7¾" OFF ℄ P/S
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF.21)
22'-8¾" OFF ℄ P/S
W.T. BHD ABOVE (REF.11)
W.T. FLR. BELOW (REF.7)
E.J.
SIDE FRAMING (REF.11)
LINE OF 13'-8" FLAT OVER (REF.13)
INSULATION
O.T. BHD (REF.11)
5F81
5F61
5F41
5F21
5F11
5F31
5F51
5F71
FIXED STRUCTURE FOR 20'-0" CONTAINERS (TYP) (REF.19)
BOX GIRDER AT MAIN DECK ABOVE
LEVELING PADS & GUIDES (TYP) P/S (REF.21)
20'-0" LONG CONTAINER (TYP)
35'-3½" OFF ℄ P/S
A.O. P/S ABV
V.L. P/S
O.T. BHD. (REF.11)
V.L
A.O.P/S ABV
5A81
5A61
5A41
5A21
5A11
5A31
5A51
5A71
O.T. BHD (REF.13) P/S
SWASH BHD. (REF.11)
V.L
A.O.P/S ABV.
A.O. P/S REF.12
UP
A.O. P/S (REF.20)
HATCH OPENING AT MAIN DECK ABOVE
W.T. BHD. ABV. (REF.11)
109
W.T. FLOOR BELOW (REF.7)
24" TYP
10'-4¾"
15"x23" F.W.B.P.M.H. P/S
UP 18" LADDER
24"
DRAINWELL P/S
INSUL
15½"
5'-10"
15"x23" F.W.B.P.M.H. PORT
110
15"x23" F.W.B.P.M.H. STBD.
25'-3½" OFF ℄ P/S
DRAINWELL ENCLOSURES
E.J.
℄
LINE OF SHELL AT TANK TOP 5'-6" ABOVE B.L. (REF.5)
LINE OF SHELL AT 21'-8" FLAT (OVER) (REF.13)
8
7
6

PLAN VIEW 7-A
FRAMES 93-109


11
10
9
109
110
112
114
114.01 (M-1)
114.04 (M-4)
114.06 (M-6)
114.08 (M-8)
114.11
15"x23" F.W.T.M.H.
3'-6"
15"x23" F.W.T.M.H. P/S
INSUL.
29'-8 5/16" OFF ℄ P/S
15"x23" F.W.T.M.H. P/S
3'-0"
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF.21)
12'-6 1/2" OFF ℄ P/S
A.O. P/S ABV
5AF81
5AF61
5AF41
5AF21
5AF11
5AF31
5AF51
5AF71
FIXED STRUCTURE FOR 20'-0" CONTAINERS (TYP.) (REF. 13)
BOX GIRDER AT MAIN DECK ABOVE
20'-0" LONG CONTAINER (TYP.)
35'-3 1/2" OFF ℄
O.T. BHD. P/S (REF. 14)
A.O. P/S (ABV)
V.L.
A.O. P/S ABV
LEVELING PADS & GUIDES (TYP.) P/S (REF. 21)
5AA81
5AA61
5AA41
5AA21
5AA11
5AA31
5AA51
5AA71
25'-3 1/2"
DK. DRAIN
A.O. P/S
UP
A.O. P/S (REF. 9)
2'-0"
15"x23" F.W.T.M.H.
10'-4 3/4"
15"x23" F.W.B.P.M.H. PORT
3'-6"
14"
15"x23 F.W.B.P.M.H.
2'-0" P/S (TYP.)
(M-11)
HATCH OPENING AT MAIN DECK ABOVE
UP
LADDER
24"
DRAINWELL (REF. 6) P/S
DK. DRAIN
INSULATION
DRAINWELL ENCLOSURE
15"x23" F.W.B.P.M.H
23'-1 3/4"
℄ SHIP
W.T. BHD. ABOVE (REF. 11)
W.T. FLR. BELOW (REF. 6)
20"
E.J.
FOR CONT. SEE PLAN 7-A
SWASH BHD. 113 (REF. 20)
FUEL OIL WING TANK NO. 10 A P/S
HOLD NO. 5A (REFRIGERATED)
O.T. BHD. 114.03 (M-3) (REF. 9)
SWASH BHD. 114.07 (REF. 9) (M-7)
FUEL OIL WING TANK NO. 10 B P/S
SIDE FRAMING
W.T. BHD. ABOVE (REF. 9)
W.T. FLR. BELOW (REF. 8)
FOR CONT. SEE PLAN 13-A
LINE OF SHELL AT 21'-8" FLAT (OVER)
LINE OF SHELL AT TANK TOP 5'-6" ABOVE B.L.

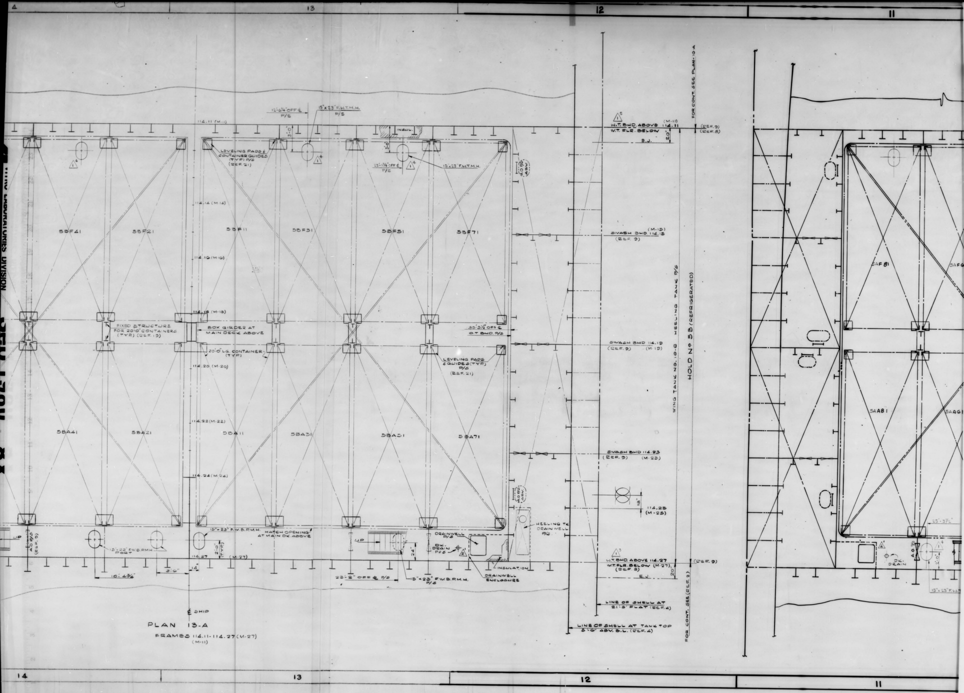
PLAN VIEW 10-A

FRAMES 109 - 114.11 (M-11)

BUILDERS PLAN NO. H-4650-111-10-06

FRAME 4 OF 6

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910



4
13
12
11
14
114.11 (M-11)
12'-6¼" OFF ℄ P/S
15"x23" F.W.T.M.H. P/S
3'-0"
INSUL.
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF. 21)
23'-1¾" OFF ℄ P/S
15"x23" F.W.T.M.H.
A.O P/S ABV.
114.14 (M-14)
114.16 (M-16)
114.18 (M-18)
114.20 (M-20)
114.22 (M-22)
114.24 (M-24)
5BF41
5BF21
5BF11
5BF31
5BF51
5BF71
5BA41
5BA21
5BA11
5BA31
5BA51
5BA71
FIXED STRUCTURE FOR 20'-0" CONTAINERS (TYP) (REF. 19)
BOX GIRDER AT MAIN DECK ABOVE
20'-0" LG. CONTAINER (TYP)
LEVELING PADS & GUIDES (TYP) P/S (REF. 21)
35'-3½" OFF ℄ O.T BHD. P/S
W.T. BHD. ABOVE 114.11 (M-11)
W.T. FLR. BELOW
(REF. 9)
(REF. 8)
E.J.
20"
FOR CONT. SEE PLAN-10 A
SWASH BHD. 114.15 (M-15) (REF. 9)
SWASH BHD 114.19 (REF. 9) (M-19)
SWASH BHD 114.23 (REF. 9) (M-23)
WING TANK NO. 10-C HEELING TANK P/S
HOLD Nº 5B (REFRIGERATED)
18"
114.25 (M-25)
HEELING TK DRAINWELL P/S
W.T. BHD. ABOVE 114.27
W.T. FLR. BELOW (M-27)
(REF. 8)
(REF. 9)
FOR CONT. SEE (REF. 2)
LINE OF SHELL AT 21'-8" FLAT (REF. 4)
LINE OF SHELL AT TANK TOP 5'-6" ABV. B.L. (REF. 4)
UP
A.O P/S (REF. 9)
15"x23" F.W.B.P.M.H. PORT
15"x23" F.W.B.P.M.H.
HATCH OPENING AT MAIN DK. ABOVE
2'-0" (TYP)
114.27
(M-27)
10'-4¾"
3'-6"
14"
23'-2" OFF ℄ P/S
15"x23" F.W.B.P.M.H. P/S
24"
DRAINWELL P/S
DK. DRAIN P&S
INSULATION
DRAINWELL ENCLOSURE
℄ SHIP
5AF81
5AF6
5AAB1
5AAG1
25'-3½"
DK. DRAIN
15"x23" F.W.T

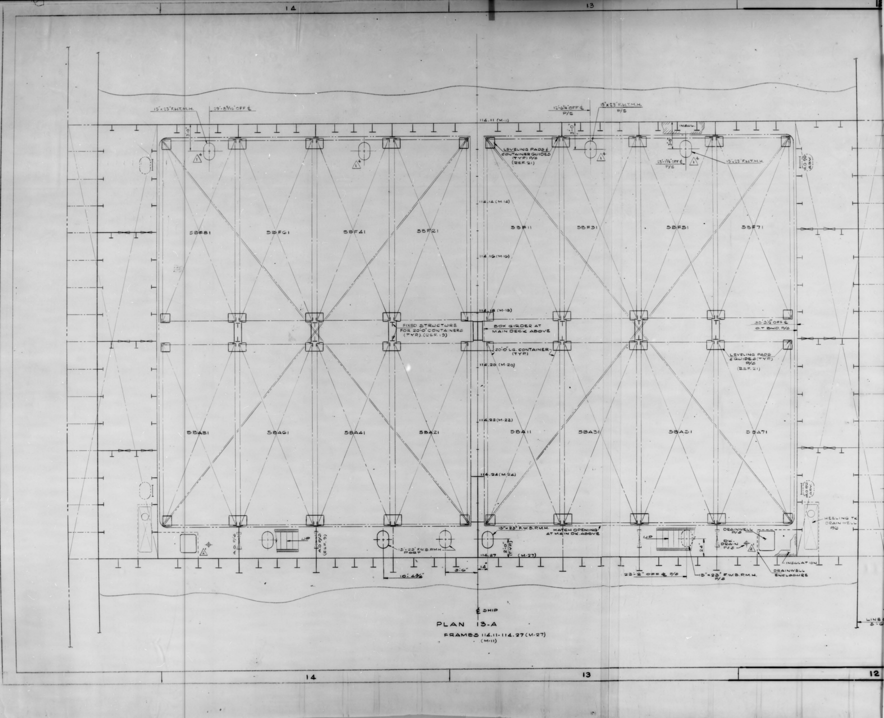
PLAN 13-A

FRAMES 114.11-114.27 (M-27)
(M-11)

RAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-06

FRAME 5 OF 6


14
13
12
15"x23" F.W.T.M.H.
29'-8 5/16" OFF ℄
12'-6 1/4" OFF ℄ P/S
15"x23" F.W.T.M.H. P/S
114.11 (M-11)
3'-0"
INSUL.
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF. 21)
23'-1 3/4" OFF ℄ P/S
15"x23" F.W.T.M.H.
A.O P/S ABV.
114.14 (M-14)
114.16 (M-16)
114.18 (M-18)
114.20 (M-20)
114.22 (M-22)
114.24 (M-24)
5BF81
5BF61
5BF41
5BF21
5BF11
5BF31
5BF51
5BF71
FIXED STRUCTURE FOR 20'-0" CONTAINERS (TYP). (REF. 19)
BOX GIRDER AT MAIN DECK ABOVE
20'-0" LG. CONTAINER (TYP)
35'-3 1/2" OFF ℄ O.T. BHD. P/S
LEVELING PADS & GUIDES (TYP) P/S (REF. 21)
5BA81
5BA61
5BA41
5BA21
5BA11
5BA31
5BA51
5BA71
15"x23" F.W.B.P.M.H.
HATCH OPENING AT MAIN DK. ABOVE
UP
A.O P/S
A.O P/S (REF. 9)
15"x23" F.W.B.P.M.H. PORT
2'-0" (TYP)
114.27
(M-27)
10'-4 3/4"
3'-6"
14"
DRAINWELL P/S
DK. DRAIN P&S
24"
23'-2" OFF ℄ P/S
15"x23" F.W.B.P.M.H. P/S
HEELING TK DRAINWELL P/S
INSULATION
DRAINWELL ENCLOSURE
℄ SHIP
LINE
3'-6

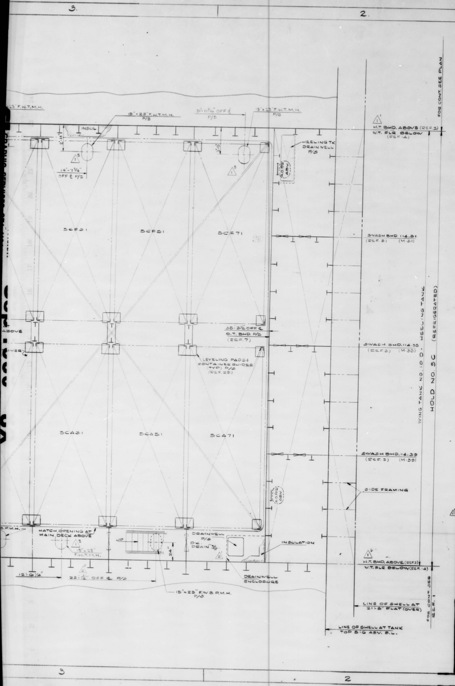
PLAN 13-A

FRAMES 114.11-114.27 (M-27)
(M-11)

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-06

FRAME 6 OF 6


3.
2.
15"×23" F.W.T.M.H. P/S
31'-11⅝" OFF ℄ P/S
15"×23" F.W.T.M.H. P/S
INSUL
2'-11"
1'-0"
14'-7¾" OFF ℄ P/S
HEELING TK DRAIN WELL P/S
W.T. BHD. ABOVE (REF. 3)
W.T. FLR. BELOW (REF. 14)
FOR CONT. SEE PLAN
5CF31
5CF51
5CF71
SWASH BHD. 114.31 (REF. 3) (M-31)
35'-3½" OFF ℄
O.T. BHD. P/S (REF. 7)
ABOVE
LEVELING PADS & CONTAINER GUIDES TYP. P/S (REF. 23)
SWASH BHD. 114.35 (REF. 3) (M-35)
WING TANK NO. 10 D. HEELING TANK
HOLD NO. 5C (REFRIGERATED)
5CA31
5CA51
5CA71
SWASH BHD. 114.39 (REF. 3) (M-39)
SIDE FRAMING
HATCH OPENING AT MAIN DECK ABOVE
DRAINWELL P/S
DK. DRAIN
INSULATION
W.T. BHD. ABOVE (REF. 3)
W.T. FLR. BELOW (REF. 14)
24"
12'-6½"
22'-1½" OFF ℄ P/S
DRAINWELL ENCLOSURE
15"×23" F.W.B.R.M.H. P/S
LINE OF SHELL AT 21'-8" FLAT (OVER)
FOR CONT. SEE REF. 1
LINE OF SHELL AT TANK TOP 5'-6 ABV. B.L.
3
2

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	7/7/77	2,3,4,5	PLAN "3-A" REVISED AS FOLLOWS: 1) REVISED TYPE OF TRANSV. BHD. 114.27 (M-27) FROM "OT" TO "W.T.	R L W	
		3	2) ADDED MANHOLE 3'-6" OFF ℄ TO STB'D. & 2'-6" AFT OF BHD. 114.27 (M-27)		
		3	3) INDICATED SIZE & TYPE OF MANHOLE 12'-6¼" OFF ℄ TO STB'D. & 2'-0" FWD. BHD. 114.43 (M-43)		
		10	4) IN PLAN "10-A" ADDED MANHOLE 3'-6" OFF ℄ TO PORT & 2'-0" AFT OF BHD. 125 ABV. ALTERATIONS 1¹ THRU 1⁴ IN ACCORDANCE WITH G. SHARP APP'L. LTR. DATED 5-4-77		
		2,3,4,6,7,9,10	5) IN PLAN "3-A", "7-A" & "10-A" REVISED LOCATION & TYPE OF MANHOLES TO AGREE WITH MANHOLE LIST. REF. #24 ADDED TO SUIT.		TLM
		2 THRU 14	6) IN PLANS "3-A", "7-A", "10-A" & "13-A" REVISED TYPE OF TRANSV. BHDS. 114.43 (M-43), 125 & 141 FROM "O.T." TO "W.T." ABV. ALT. 1⁶ TO SUIT U.S.C.G. APP'L. LTR. DATED 5-20-77	CDS	JM J 7/8/77
2.	7/24/80	2,4,6,8,9,11 3,10,13 9,11	1. COAMINGS AROUND DRAIN-WELLS DELETED. 2. MANHOLE DIMENSIONS REVISED 3. MANHOLE ADDED BETWEEN FRS. 140-141, 34'-3½" OFF C.L. - P&S.	CDS	7/24/80 TLM

REFERENCE PLANS

NO.	PLAN NO.	TITLE
24	144-00-01	MANHOLE LIST FWD. FR. 157
23	129-06-30	LAYOUT & DETAILS OF DOUBLER PLTS. ON DKS & FLATS
22	129-06-04	DETAILS CONVERT. GUIDES HOLDS 2, 3, 4 & 8
21	129-06-03	ARRGT. CONVERT. GUIDES HOLD 4 & 8
20	129-06-09	DETAILS FIXED GUIDES-HOLDS 1, 5 TO 7
19	232-00-06	VERTICAL LADDERS ABV. INNERBOTTOM
18	129-06-08	ARRGT. FIXED GUIDES HOLDS 1, 5 TO 7 - SHT-2
17	129-06-07	ARRGT. FIXED GUIDES HOLDS 1, 5 TO 7 - SHT-1
16	129-05-03	SHELL EXPANSION - FR. 114.43 (M-43) - 153
15	129-05-02	SHELL EXPANSION - FR. 109 - 114.43 (M-43)
14	129-03-24	TRANSV. FLRS. FR. 110 - 114.43 (M-43)
13	129-03-06	TRANSV. FLRS. FR. 114.47 (M-47) - 153
12	129-02-53	2ND DK. PLTG. & GIRDERS - FR. 126 - 153½
11	129-02-51	21'-8" FLAT - FR. 114.11 (M.11) - FR. 125
10	129-02-23	MAIN DK. PLTG. & GDRS. - FR. 109 - 114.44 (M.44)
9	129-02-04	I.B. PLTG. FR. 114.43 (M-43) - 153½
8	129-02-03	I.B. PLTG. FR. 109 - 114.43 (M-43) (M-43)
7	129-01-44	LONG'L BHDS. ON TANK TOP - FR. 114.43 - 153½
6	129-01-36	C.O. TANKS - FR. 157 FWD.
5	129-01-12	TRANSV. SECTIONS - FRS. 142 - 156
4	129-01-10	TRANSV. SECTIONS - FRS. 114.44 (M.44) - 141
3	129-01-07	TRANSV. SECTIONS - FR. 114.03 (M-3) - 114.43 (M.43)
2	111-10-08	GEN. ARRGT. TANK TOP - FR. 153½ - AFT
1	H4650-111-10-06	GEN. ARRGT. TANK TOP - FR. 77½ - 114.27 (M-27)

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DRAWN C/B.S.
CHECKED
REVIEWED
DATE 5 APRIL 1977
IN CHARGE
EXAMINED T. L. Mullin
APPROVED

PLAN NO. H4650-111-10-07 ALT. NO. 2³

GENERAL ARRANGEMENT TANK TOP FRS. 114.27-153½ (M-27)

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-4-77				
A.B.S.					
U.S.C.G.	5-20-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE			
	ALTERATION	-	-	1	2
	ENGINEERING DISTRIBUTION	4/6/77	4/6/77	7/26/77	7/?/80
MAIL	OWNERS	4		2	4
	AMERICAN BUREAU	3		3	
	LLOYD'S R.S.				
	U.S.M.A.				
	U.S. NAVY				
	U.S.C.G.	3		3	
	JOINER CONT'R.				
	USPH			3	
INSPECTION	OWNER'S INSP.	1		1	
	AM. BU. INSP.			1	
	LLOYD'S INSP.				
	U.S.M.A. INSP.			1	
	U.S. NAVY INSP.				
	U.S.C.G. INSP.			1	
	CD SCHAUB			1	
OFFICE	HULL DRAFT.	[illegible]	1	1	
	MACH. DRAFT.	[illegible]	2		
	ELEC. DRAFT.	[illegible]	1		
	OUTFIT. DRAFT.				
	ESTIMATING				
	ENGINEERING	[illegible]	1		
MISC.	PRODUCTION				
	DEPT.				
	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	4	21	5
	YARD DISTRIBUTION	/	4/6/77	7/29/77	
YARD	GEN. SUPT.		1		
	GEN. [illegible]		1		
	PIECE GATE - 11		1		
	TEST DEPARTMENT				
	QUALITY ASSURANCE		1		
	HULL PLANNING	[illegible]	7		
STRUCTURAL	GROUND ASSEMBLY		2		
	35 DEPT.		2		
	P. McNAIR		1		
	H. LEVY		1		
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.		2		
	OPTICAL [illegible]		2		
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52		1		
	OUTFIT. [illegible]		1		
	PIPE DRAFT.		2		
	BOILER SHOP - 58		2		
	OUTSIDE MACH. - 60		2		
	Q-MAT'L		1		
	ELECTRIC SHOP - 70				
	SHEET MET. SHOP				
	COPPER SHOP - 81				
	PAINT SHOP - 78		1		
OTHER	WELDING				
	MOLD LOFT - 41		1		
	BRACKET SHOP				
	TOTAL YARD DIST.	/	4	32	

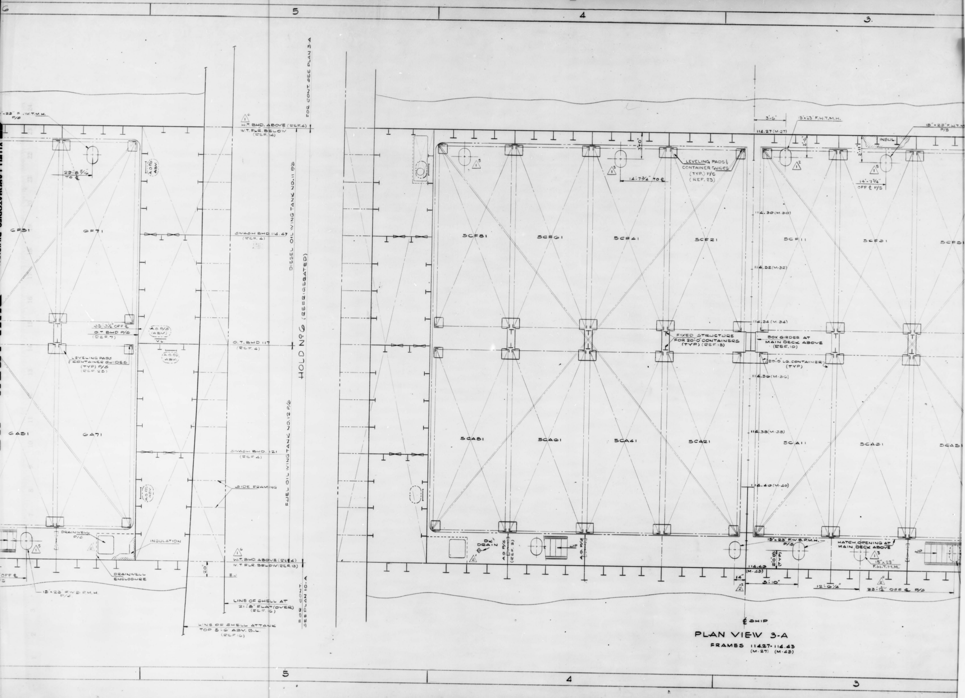
H-7

35.0 SQ. FT.

BUILDERS PLAN NO. H-4650-111-10-07

FRAME 1 OF 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


6
5
4
3
W.T. BHD. ABOVE (REF.4)
W.T. FLR. BELOW (REF.14)
FOR CONT. SEE PLAN 3-A
GF51
GF71
GA51
GA71
23'-8 5/16" TO ℄
25'-3 3/4" OFF ℄
O.T. BHD P/S (REF.7)
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF.23)
A.O. P/S ABV.
SWASH BHD. 114.47 (REF.4)
O.T. BHD 117 (REF.4)
SWASH BHD. 121 (REF.4)
SIDE FRAMING
DIESEL OIL WING TANK NO.11 P/S
FUEL OIL WING TANK NO.12 P/S
HOLD Nº 6 (REFRIGERATED)
DRAINWELL P/S
DRAINWELL ENCLOSURE
INSULATION
15×23 F.W.B.P.M.H. P/S
W.T. BHD. ABOVE (REF.4)
W.T. FLR. BELOW (REF.13)
LINE OF SHELL AT 21'-8" FLAT (OVER) (REF.6)
LINE OF SHELL AT TANK TOP 3'-6 ABV. B.L. (REF.6)
FOR CONT. SEE PLAN 10-A
114.27 (M-27)
3'-6"
15"×23" F.W.T.M.H.
3'-0"
14'-7 3/4" TO ℄
LEVELING PADS & CONTAINER GUIDES (TYP.) P/S (REF.23)
INSUL
14'-7 3/4" OFF ℄ P/S
114.30 (M-30)
114.32 (M-32)
114.34 (M-34)
114.36 (M-36)
114.38 (M-38)
114.40 (M-40)
114.43 (M-43)
5CF81
5CF61
5CF41
5CF21
5CF11
5CF31
5CF51
5CA81
5CA61
5CA41
5CA21
5CA11
5CA31
5CA51
FIXED STRUCTURE FOR 20'-0" CONTAINERS (TYP.) (REF.18)
BOX GIRDER AT MAIN DECK ABOVE (REF.10)
20'-0" LG. CONTAINER (TYP)
DK. DRAIN
A.O. P/S (REF.3)
UP
15"×23" F.W.B.P.M.H. P/S
HATCH OPENING AT MAIN DECK ABOVE
15"×23" F.W.T.M.H.
14"
3'-10"
12'-6 1/4"
23'-1 1/2" OFF ℄ P/S
℄ SHIP

PLAN VIEW 3-A

FRAMES 114.27-114.43
(M-27) (M-43)

BUILDERS PLAN NO. H-4650-111-10-07

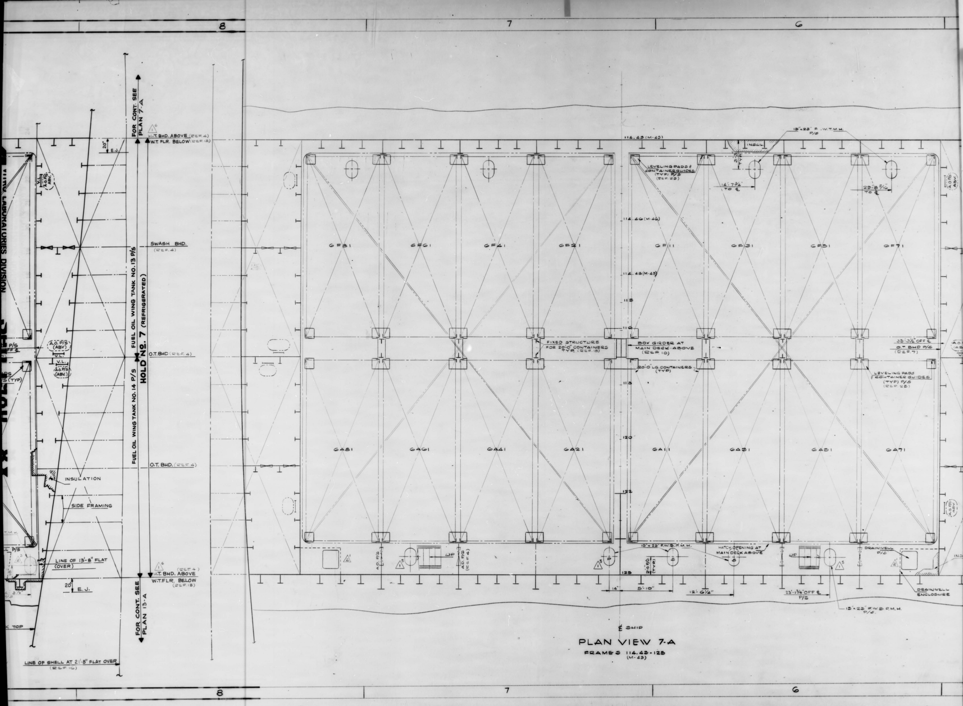
FRAME 2 OF 6

1400 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

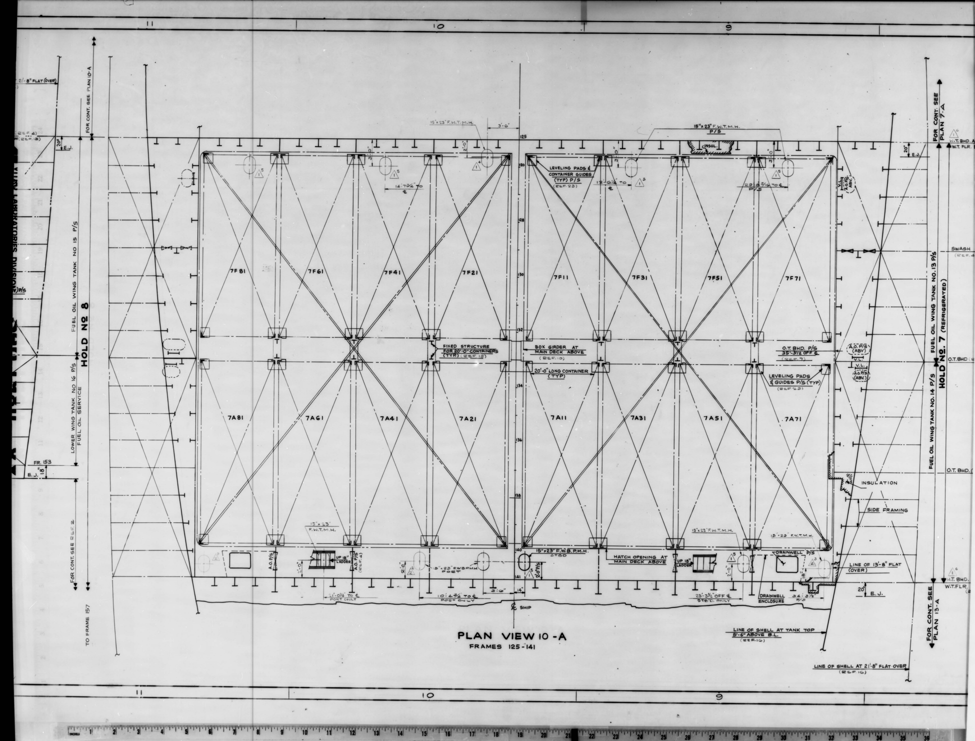
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 111-10-07

FRAME 3 OF 6


8
7
6
FOR CONT. SEE PLAN 7-A
W.T. BHD. ABOVE (REF. 4)
W.T. FLR. BELOW (REF. 13)
E.J.
20"
SWASH BHD. (REF. 4)
FUEL OIL WING TANK NO. 13 P/S
HOLD NO. 7 (REFRIGERATED)
FUEL OIL WING TANK NO. 14 P/S
O.T. BHD (REF. 4)
O.T. BHD. (REF. 4)
INSULATION
SIDE FRAMING
LINE OF 13'-8" FLAT (OVER)
W.T. BHD. ABOVE (REF. 4)
W.T. FLR. BELOW (REF. 13)
FOR CONT. SEE PLAN 13-A
LINE OF SHELL AT 21'-8" FLAT OVER (REF. 16)
A.O. P/S (ABV)
V.L.
114.43 (M-43)
114.46 (M-46)
114.48 (M-43)
115
116
118
120
122
123
15"×23" F.W.T.M.H. P/S
INSUL
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF. 23)
14'-7¾" TO ℄
23'-8 5/16" TO ℄
6FB1
6F61
6F41
6F21
6F11
6F31
6F51
6F71
6A81
6A61
6A41
6A21
6A11
6A31
6A51
6A71
FIXED STRUCTURES FOR 20'-0" CONTAINERS TYP. (REF. 18)
BOX GIRDER AT MAIN DECK ABOVE (REF. 10)
20'-0" LG. CONTAINERS (TYP)
33'-3½" OFF ℄
O.T. BHD P/S (REF. 7)
LEVELING PADS CONTAINER GUIDES (TYP) P/S (REF. 23)
15"×23" F.W.B.P.M.H.
HATCH OPENING AT MAIN DECK ABOVE
UP
A.O. P/S (REF. 4)
DRAINWELL P/S
DRAINWELL ENCLOSURE
2'-0" FR (TYP)
14"
5'-10"
12'-6¼"
23'-1¾" OFF ℄ P/S
15"×23" F.W.B.P.M.H. P/S
℄ SHIP

PLAN VIEW 7-A
FRAMES 114.43-123
(M-43)



PLAN VIEW 10 -A

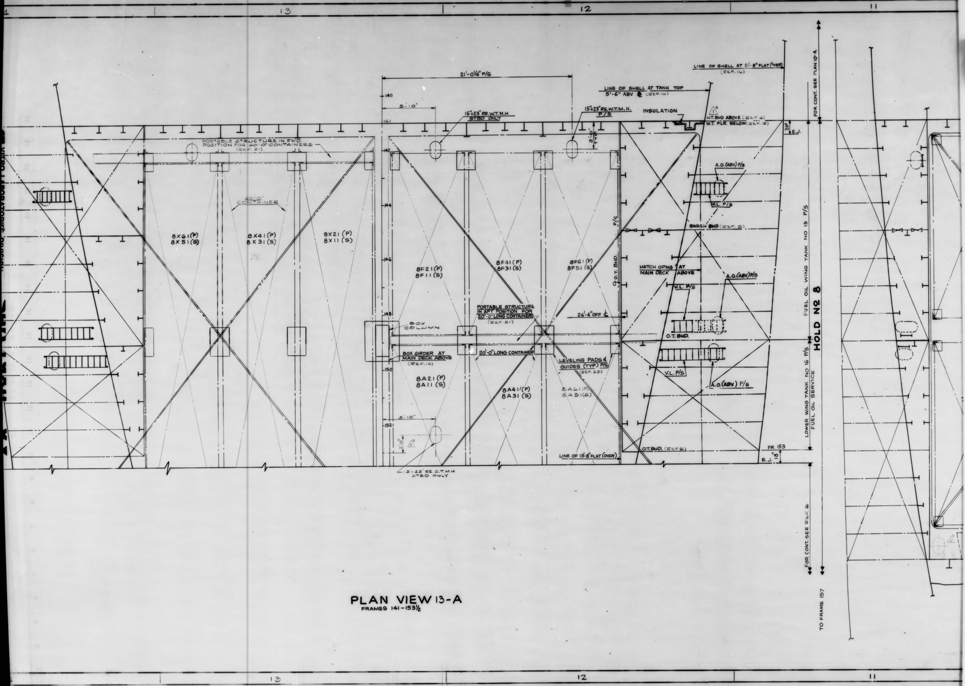
FRAMES 125-141

11
10
9
HOLD Nº 8
HOLD Nº 7 (REFRIGERATED)
FUEL OIL WING TANK NO 15 P/S
LOWER WING TANK NO 16 P/S
FUEL OIL SERVICE
FUEL OIL WING TANK NO. 13 P/S
FUEL OIL WING TANK NO. 14 P/S
FOR CONT. SEE PLAN 10-A
FOR CONT. SEE REF 2
FOR CONT. SEE PLAN 7-A
FOR CONT. SEE PLAN 13-A
TO FRAME 157
FR. 153
21'-8" FLAT (OVER)
E.J.
20"
15"x23" F.W.T.M.H.
15"x23" F.W.T.M.H. P/S
3'-6"
14'-7¾" TO ℄
12'-6¼" TO ℄
23'-8 5/16" TO ℄ P/S
INSUL.
LEVELING PADS & CONTAINER GUIDES (TYP) P/S (REF. 23)
7F81
7F61
7F41
7F21
7F11
7F31
7F51
7F71
7A81
7A61
7A41
7A21
7A11
7A31
7A51
7A71
FIXED STRUCTURE FOR 20'-0" CONTAINERS (TYP) (REF. 15)
BOX GIRDER AT MAIN DECK ABOVE (REF. 10)
20'-0" LONG CONTAINER (TYP)
O.T. BHD. P/S 35'-3½ OFF ℄ (REF. 7)
LEVELING PADS & GUIDES P/S (TYP) (REF. 23)
A.O. P/S (ABV)
V.L.
SWASH
O.T. BHD.
W.T. BHD.
W.T. FLR.
INSULATION
SIDE FRAMING
125
128
130
132
134
136
138
140
141
15"x23" F.W.T.M.H.
UP 18" LADDER
A.O. P/S (REF. 4)
15"x23" F.W.B.P.M.H. PORT
15"x23" F.W.B.P.M.H. STBD
HATCH OPENING AT MAIN DECK ABOVE
DRAINWELL P/S
LINE OF 13'-8" FLAT (OVER)
2'-0"
21'-0¼ TO ℄ PORT ONLY
10'-4¾ TO ℄ PORT ONLY
3'-6"
14"
25'-3½" OFF ℄ STBD. ONLY
DRAINWELL ENCLOSURE
34'-3½" P/S
℄ SHIP
LINE OF SHELL AT TANK TOP 5'-6" ABOVE B.L. (REF. 16)
LINE OF SHELL AT 21'-8" FLAT OVER (REF. 16)
INCHES 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 111-10-07

FRAME 4 OF 6

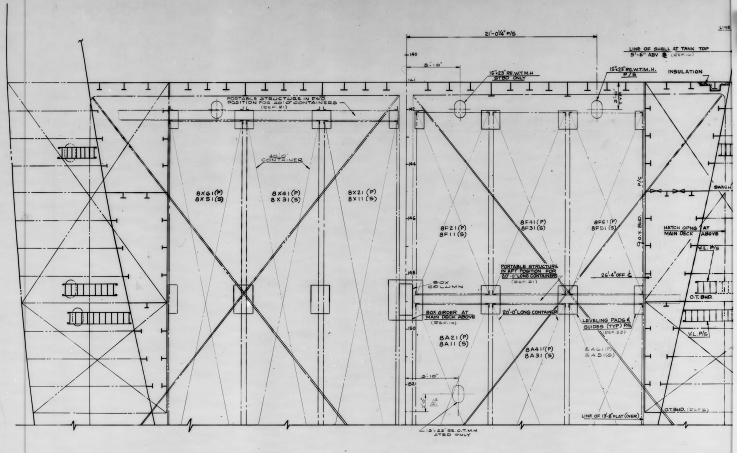

13
12
11
21'-0¼" P/S
3'-10"
140
141
142
144
146
148
150
152
15"x23" RE.W.T.M.H
STBD ONLY
15"x23" RE.W.T.M.H.
P/S
3'-0" TYP.
INSULATION
LINE OF SHELL AT TANK TOP
5'-6" ABV ℄ (REF.16)
LINE OF SHELL AT 21'-8" FLAT (OVER)
(REF.16)
W.T. BHD ABOVE (REF.4)
W.T. FLR. BELOW (REF.13)
20"
E.J.
FOR CONT. SEE PLAN 10-A
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" CONTAINERS
(REF.21)
40'-0" CONTAINER
8XG1(P)
8X51(S)
8X41(P)
8X31(S)
8X21(P)
8X11(S)
8F21(P)
8F11(S)
8F41(P)
8F31(S)
8F61(P)
8F51(S)
A.O.(ABV) P/S
V.L. P/S
P/S
SWASH BHD (REF.5)
O.T. BHD.
HATCH OPNG AT MAIN DECK ABOVE
A.O.(ABV) P/S
V.L. P/S
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" LONG CONTAINERS
(REF.21)
26'-4" OFF ℄
BOX COLUMN
BOX GIRDER AT MAIN DECK ABOVE
(REF.10)
20'-0" LONG CONTAINER
LEVELING PADS & GUIDES (TYP) P/S
(REF.23)
O.T. BHD.
V.L. P/S
A.O.(ABV) P/S
8A21(P)
8A11(S)
8A41(P)
8A31(S)
8A61(P)
8A51(S)
3'-10"
2'-0"
13"x23" RE.O.T.M.H
STBD ONLY
LINE OF 13'-8" FLAT (OVER)
O.T. BHD. (REF.5)
FR. 153
E.J.
18"
FUEL OIL WING TANK NO 15 P/S
HOLD NO 8
LOWER WING TANK NO 16 P/S
FUEL OIL SERVICE
FOR CONT. SEE REF.2
TO FRAME 157

PLAN VIEW 13-A
FRAMES 141-153½

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-07

FRAME 5 OF 6


21'-0¼" P/S
LINE OF SHELL AT TANK TOP
5'-6" ABV ℄ (REF. 16)
LINE
5'-10"
15"x23" RE. W.T.M.H
STBD ONLY
15"x23" RE. W.T.M.H.
P/S
3'-0" TYP
INSULATION
PORTABLE STRUCTURE IN FWD POSITION FOR 40'0" CONTAINERS
(REF. 21)
40'0" CONTAINER
8X61(P)
8X51(S)
8X41(P)
8X31(S)
8X21(P)
8X11(S)
140
141
142
144
146
148
150
152
8F21(P)
8F11(S)
8F41(P)
8F31(S)
8F61(P)
8F51(S)
P/S
O.T. BHD.
SWASH
HATCH OPNG AT
MAIN DECK ABOVE
V.L. P/S
PORTABLE STRUCTURE
IN AFT POSITION FOR
20'-0" LONG CONTAINERS
(REF. 21)
26'-4" OFF ℄
BOX
COLUMN
BOX GIRDER AT
MAIN DECK ABOVE
(REF. 10)
20'-0" LONG CONTAINER
LEVELING PADS &
GUIDES (TYP) P/S
(REF. 23)
O.T. BHD.
V.L. P/S
8A21(P)
8A11(S)
8A41(P)
8A31(S)
8A61(P)
8A51(S)
5'-10"
2'-0"
2
LINE OF 13'-8" FLAT (OVER)
O.T. BHD. (REF. 5)
13"x23" RE. O.T.M.H.
STBD ONLY
14
13
12

PLAN VIEW 13-A
FRAMES 141-153½

BUILDERS PLAN NO. H-4650-111-10-07

FRAME 6 OF 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

GENERAL NOTES

- ALL DIMENSIONS ARE SAME P/S UNLESS OTHERWISE NOTED
- ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES
- SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC. ARE CLEAR OPENING
- FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BULKHEADS GIRDERS ETC. EXACT LOCATIONS WILL BE TAKEN FROM THE STRUCTURAL PLANS.
- ALL VERTICAL LADDERS & LADDER RUNGS WILL BE A MINIMUM OF 16" WIDE INSIDE STRINGERS AND RETURNS, RESPECTIVELY UNLESS OTHERWISE NOTED.

ABBREVIATIONS.

ABL	ABOVE BASELINE
A.O	ACCESS OPENING
BHD.	BULKHEAD
℄	CENTERLINE
COAM	COAMING
FR	FRAME
FWD	FORWARD
FLR	FLOOR
L.H	LIGHTENING HOLE
№	NUMBER
P/S	PORT & STARBOARD
R.W.M.H.B.P.	RAISED WATER-TIGHT MANHOLE BOLTED PLATE
RES.	RESERVATION
STAN.	STANCHION
V.L.	VERTICAL LADDER.
W.T.	WATER TIGHT.
RE WT. MH.	RECESSED WT. MANHOLE
ROT MH	RAISED OIL TIGHT MANHOLE
ROT MH BP	RAISED OIL TIGHT MANHOLE BOLTED PLATE

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	7/8/77	6&7 7&9 9	1) INDICATED "O.T." FLOOR BELOW AT FR. 176. 2) AT FR. 184 REVISED FLOOR BELOW AS BEING "O.T" IN LIEU OF "W.T." 3) ADDED "Nº 17" TO DEEP TANK BET. FRS. 184-195 ABV. ALTERATIONS IN ACCORDANCE WITH G. SHARP APP'L. LTR. DATED 5-4-77.	R L W	
		3,4 7 1A	4) REVISED LOCATION OF MANHOLES TO AGREE WITH MANHOLE LIST REF. #18 & ADDED REF. #20.	CDS	7/15/77

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 5 APRIL 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-08
ALT. NO. 1⁴

GENERAL ARRANGEMENT TANK TOP FRS. 153½-AFT

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-4-77				
A.B.S.					
U.S.C.G.	5-20-77				
LLOYD'S R.S.					
U.S.P.H.S.	5-9-77				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
20	144-00-01	MANHOLE LIST - FWD. FR. 157
19	232-00-09	INCLINED LADDERS IN CARGO HOLDS NO 1,2,3,4 & 8
18	144-00-02	MANHOLE LIST - AFT FR. 157
17	141-00-03	POWER OPERATED HSWT DOOR IN MACHY SPC.
16	129-03-23	CVK & I.B. GIRDERS - FR. 153 - AFT
15	372-00-02	COND. SCOOP & MAIN COND OVBD DISCH
14	129-03-10	AFT PEAK FRAMING - FR. 206 - 222
13	129-03-08	TRANSV. FLOORS - FR. 185 - 205
12	129-03-07	TRANSV. FLOORS - FR. 154 - 184
11	129-02-05	INNERBOTTOM PLTG. FR. 153 - AFT
10	372-00-01	STRUCT SEA CHESTS AFT FR 157
9	129-01-24	LONG'L BHDS. ON TANK TOP - FR. 157 - AFT
8	129-01-19	TRANSV. SECTS. BHDS. FR. 212 - AFT
7	129-01-18	TRANSV. SECTS. BHDS. FR. 196 - 211
6	129-01-17	TRANSV. SECTS. BHDS. FR. 185 - 195
5	129-01-16	TRANSV. SECTS. BHDS. FR. 171 - 184
4	129-01-13	TRANSV. SECTS. BHDS. FR. 157 - 170
3	111-10-11	GEN. ARRGT. 26'-0" AUX. MACHY FLTS - 20'-0" FLAT
2	111-10-07	GEN. ARRGT. TANK TOP - FR. 114, 27 - 153½
1	H4650-111-10-04	GEN. ARRGT. I.B. FR. 153½ AFT

DATE OF ISSUE

ALTERATION		–	–	1⁴
ENGINEERING DISTRIBUTION		4/6/77	4/6/77	7/20/77
MAIL	OWNERS	4		2
	AMERICAN BUREAU	3		3
	LLOYD'S R.S.			
	U.S.M.A.			
	U.S NAVY			
	U.S.C.G.	3		3
	JOINER CONT'R.			
	USPH			3
INSPECTION	OWNER'S INSP.	1		1
	AM. BU. INSP.			1
	LLOYD'S INSP.			
	U.S.M.A. INSP.			1
	U.S. NAVY INSP.			
	U.S.C.G. INSP.			1
	CD SCHAUB			1
OFFICE	HULL DRAFT. - 21			1
	MACH. DRAFT. - 22			2
	ELEC. DRAFT. - 23			1
	OUTFIT. DRAFT. - 25			
	ESTIMATING			
	[illegible]			1
MISC.	PRODUCTION (BCD)			
	ORDER DEPT.			
	JOINER CONT. YARD			
TOTAL ENG'R. DIST.		11	4	21
YARD DISTRIBUTION			4/6/77	7/21/77
YARD	[illegible] OFFICE			1
	GRD. EASTBURG			1
	PIECE RATE - 11			1
	TEST DEPARTMENT			
	QUALITY ASSURANCE			1
	[illegible]		4	7
STRUCTURAL	GROUND ASSEMBLY			2
	35 DEPT			2
	R. McNAIC			1
	H. LEVY			1
	NO. WAY			
	NO. WAY			
	NO. WAY			
	NO. WAY			
	STRUCT. SUPER.			2
	OPTICAL DETAIL - 40			2
	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP - 52			1
	OUTFIT. #1 PIER			1
	PIPE DRAFT. - 52			2
	BOILER SHOP - 58			2
	OUTSIDE MACH. - 60			2
	D-MAT'L			1
	ELECTRIC SHOP - 70			
	SHEET MET. SHOP - 74			
	COPPER SHOP - 81			
	PAINT SHOP - 78			1
OTHER	WELDING			
	MOLD LOFT - 41			1
	BRACKET SHOP			
TOTAL YARD DIST.			4	32

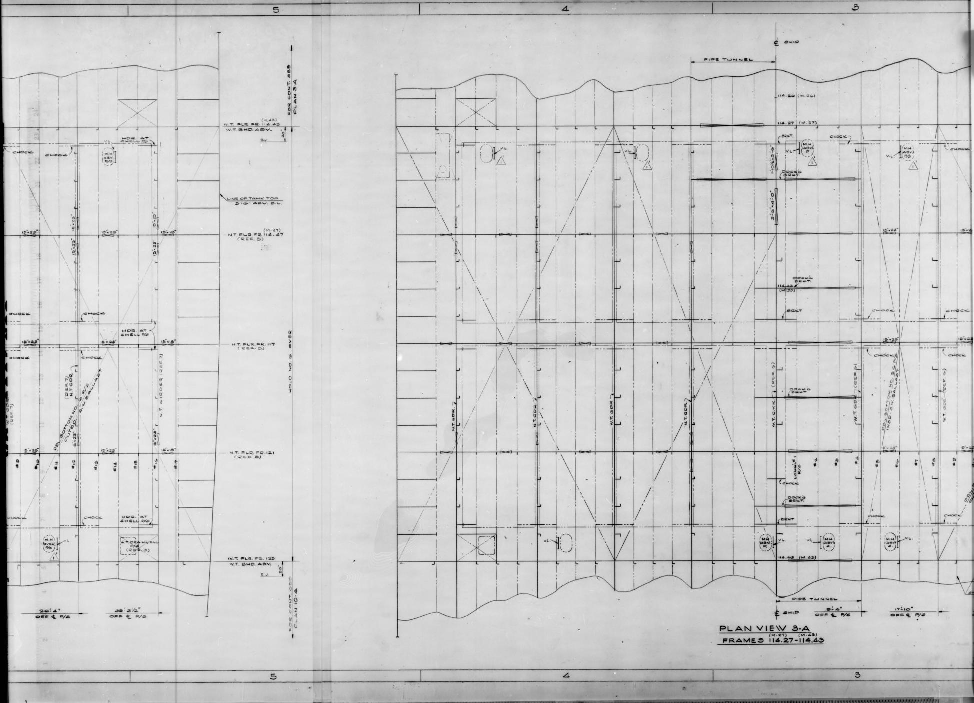
H-8

300 SQ. FT.

BUILDERS PLAN NO. H-4650-111-10-08
FRAME 1 OF 5
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

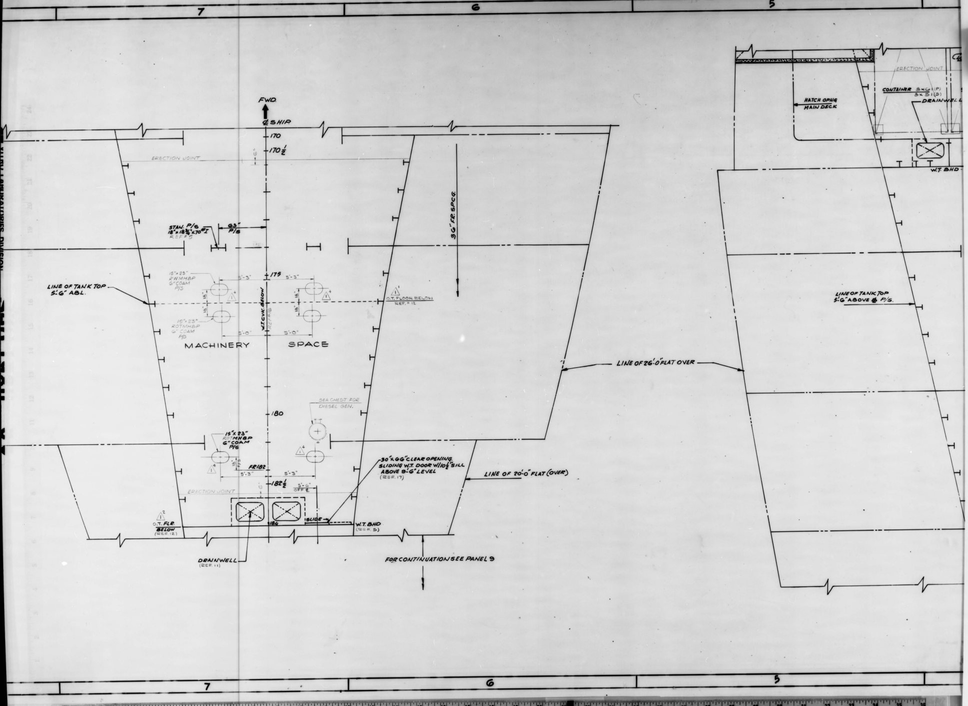
BUILDERS PLAN NO. H-4650-111-10-03

FRAME 2 OF 5


5
4
3
℄ SHIP
PIPE TUNNEL
114.26 (M.26)
114.27 (M.27)
W.T. FLR. FR. 114.43 (M.43)
W.T. BHD. ABV.
E.J.
20"
FOR CONT. SEE PLAN 3A
HDR. AT SHELL P/S
V.L.
M.H. ABV. P/S
CHOCK
LINE OF TANK TOP 3'-6" ABV. B.L.
N.T. FLR. FR. 114.47 (M.47) (REF. 5)
15"×23"
15"×18"
N.T. FLR. FR. 117 (REF. 5)
N.T. FLR. FR. 121 (REF. 5)
HOLD NO. 6 OVER
W.T. GDR. (REF. 7)
(REF. 7) N.T. GDR.
DBL. BOTTOM NO. 6 P/S OUTBD. S.W. BALLAST
N.T. GIRDER (REF. 7)
#9
#10
#11
#12
#13
#14
#15
#16
#17
M.H. (OVER) P/S
W.T. DRAINWELL P/S (REF. 3)
W.T. FLR. FR. 125
W.T. BHD. ABV.
E.J.
20"
FOR CONT. SEE PLAN 10-A
26'-4" OFF ℄ P/S
35'-3½" OFF ℄ P/S
BRKT.
M.H. (ABV.) P
1'-10½"×3'-6"
DOCK'G BRKT.
3'-6"×4'-0"
114.33 (M.33)
N.T. GDR.
W.T. GDR.
W.T. C.V.K. (REF. 6)
W.T. GDR. (REF. 6)
DBL. BOTTOM NO. 5 C P/S INBD. S.W. BALLAST
LONGL #1 P/S
#2
#3
#4
#5
#6
#7
#8
#9
M.H. (ABV.) S.
114.43 (M.43)
9'-4" OFF ℄ P/S
17'-10" OFF ℄ P/S

PLAN VIEW 3-A

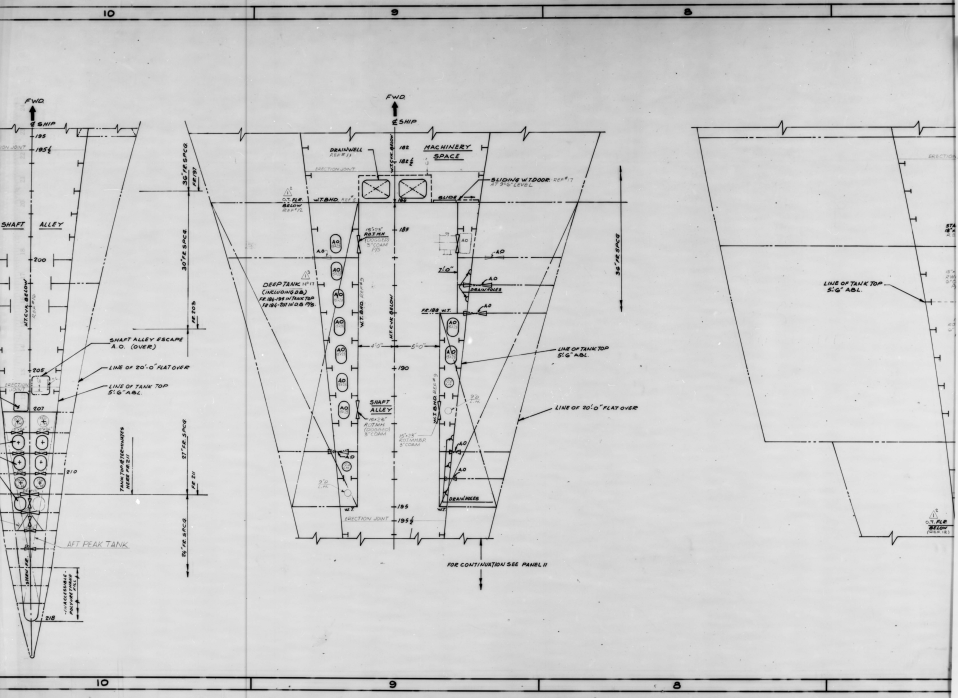
FRAMES $\overset{(M\text{-}27)}{114.27}$-$\overset{(M\text{-}43)}{114.43}$


7
6
5
FWD.
℄ SHIP
170
170 1/2
ERECTION JOINT
STAN. P/S
18"x18 3/4"x70#I
REF #5
63"
P/S
36" FR. SPCG.
15"x23"
RWMHBP
6" COAM
P/S
LINE OF TANK TOP
5'-6" ABL.
175
5'-3"
5'-3"
18"
18"
W.T. CVK. BELOW
REF #16
O.T. FLOOR BELOW
REF. # 12
15"x23"
ROTMHBP
6" COAM
P/S
5'-0"
5'-0"
MACHINERY
SPACE
SEA CHEST FOR
DIESEL GEN.
180
15"x23"
ROTMHBP
6" COAM
P/S
18"
P/S
FR182
5'-3"
5'-3"
182 1/2
5'-6"
OFF ℄
30"x66" CLEAR OPENING.
SLIDING W.T. DOOR W/10 1/2" SILL
ABOVE 9'-6" LEVEL
(REF. 17)
LINE OF 26'-0" FLAT OVER
LINE OF 20'-0" FLAT (OVER)
ERECTION JOINT
O.T. FLR.
BELOW
(REF. 12)
184
SLIDE
W.T. BHD
(REF. 5)
DRAINWELL
(REF. 11)
FOR CONTINUATION SEE PANEL 9
HATCH OPNG
MAIN DECK
ERECTION JOINT
CONTAINER 8x61(P)
8x51(S)
DRAINWELL
W.T. BHD
LINE OF TANK TOP
5'-6" ABOVE ℄ P/S.
7
6
5

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-08

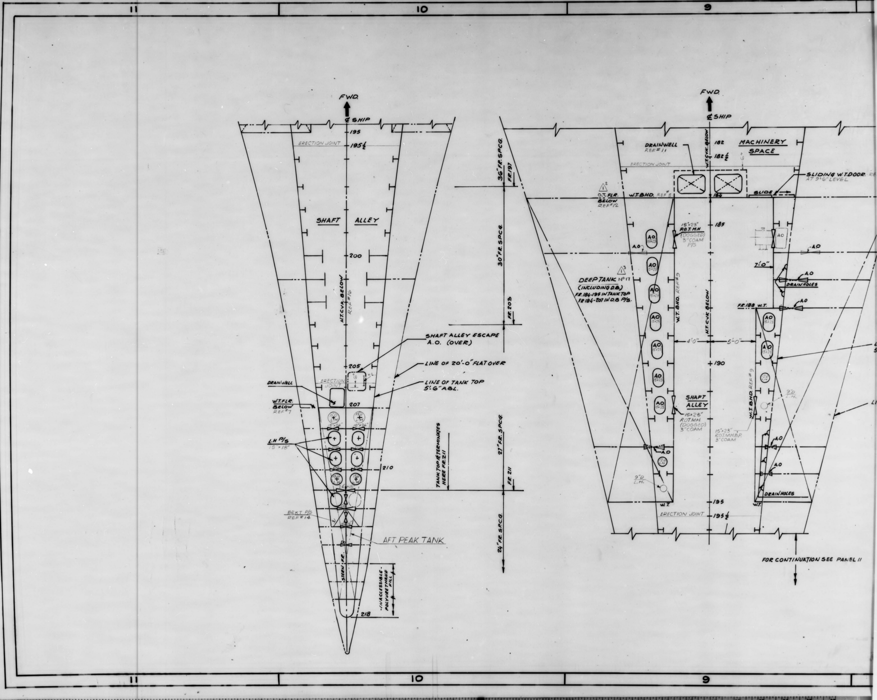
FRAME 3 OF 5


10
9
8
FWD.
℄ SHIP
195
195½
ION JOINT
SHAFT ALLEY
200
W.T. CVK. BELOW
REF #16
205
SHAFT ALLEY ESCAPE
A.O. (OVER)
LINE OF 20'-0" FLAT OVER
LINE OF TANK TOP
5'-6" ABL.
ERECTION JOINT
207
210
AFT PEAK TANK
STERN FR.
-INACCESSIBLE-
POLYURETHANE
FILL
218
36" FR. SPCG.
FR. 197
30" FR. SPCG.
FR. 203
27" FR. SPCG.
FR. 211
TANK TOP ℄ TERMINATES
HERE FR. 211
24" FR. SPCG.
FWD.
℄ SHIP
182
182½
MACHINERY
SPACE
DRAINWELL
REF #11
ERECTION JOINT
W.T. CVK. BELOW
SLIDING W.T. DOOR. REF #17
AT 9'-6" LEVEL
SLIDE
1 2
O.T. FLR.
BELOW
REF #12
W.T. BHD. REF #5
184
185
15"x23"
R.O.T. M.H.
(DOGGED)
3" COAM
P/S
A.O.
AO
15x23
1 3
DEEP TANK No 17
(INCLUDING D.B.)
FR. 184-195 IN TANK TOP
FR. 184-207 IN D.B. P/S.
W.T. BHD. REF #9
W.T. CVK. BELOW
7'-0"
DRAIN HOLES
FR. 188 W.T.
4'-0"
5'-0"
LINE OF TANK TOP
5'-6" ABL.
190
36" FR. SPCG.
12"D
L.H.
9"D
L.H.
SHAFT
ALLEY
15x23"
R.O.T. M.H.
(DOGGED)
3" COAM
15"x23"
R.O.T. M.H. B.P.
3" COAM
LINE OF 20'-0" FLAT OVER
DRAIN HOLES
W.T.
195
ERECTION JOINT
195½
FOR CONTINUATION SEE PANEL 11
ERECTION
STA
18"x
R.B.
LINE OF TANK TOP
5'-6" ABL.
1 2
O.T. FLR.
BELOW
(REF 12)
10
9
8

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-08

FRAME 4 OF 5


11
10
9
FWD.
℄ SHIP
195
ERECTION JOINT
195½
SHAFT ALLEY
200
W.T. CVR. BELOW REF #16
205
SHAFT ALLEY ESCAPE A.O. (OVER)
LINE OF 20'-0" FLAT OVER
LINE OF TANK TOP 5'-6" ABL.
DRAIN WELL
ERECTION JOINT
W.T. FLR. BELOW REF #7
207
L.H P/S 15"×18"
210
BRKT P/S REF #14
AFT PEAK TANK
STERN FR.
INACCESSIBLE - POLYURETHANE FILL
218
TANK TOP & TERMINATES HERE FR. 211
36" FR. SPCG.
FR. 197
30" FR. SPCG.
FR. 203
27" FR. SPCG.
FR. 211
24" FR. SPCG.
FWD.
℄ SHIP
DRAINWELL REF #11
W.T. CVR. BELOW
182
182½
MACHINERY SPACE
ERECTION JOINT
SLIDING W.T. DOOR RE
AT 9'-6" LEVEL
O.T. FLR. BELOW REF #12
W.T. BHD. REF #5
184
SLIDE
185
15"×23" R.O.T.M.H. (DOGGED) 3" COAM P/S
A.O
DEEP TANK No 17 (INCLUDING D.B.) FR.184-195 IN TANK TOP FR.184-207 IN D.B. P/S.
W.T. BHD. REF #9
W.T. CVR. BELOW
7'-0"
DRAIN HOLES
FR.188 W.T.
4'-0"
5'-0"
190
SHAFT ALLEY
15"×23" ROT.M.H. (DOGGED) 3" COAM
15"×23" R.O.T.M.H.B.P. 3" COAM
9"D L.H.
W.T.
195
ERECTION JOINT
195½
DRAIN HOLES
FOR CONTINUATION SEE PANEL 11

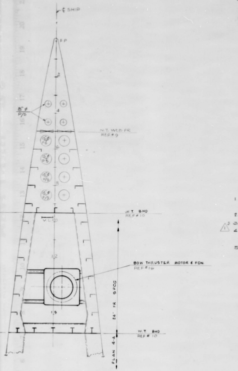
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-08

FRAME 5 OF 5

ABBREVIATIONS

ABV	ABOVE
A.O	ACCESS OPENING
BHD	BULKHEAD
DN	DOWN
FR	FRAME
F.P	FORE PEAK
GDR	GIRDER
L.H	LIGHTENING HOLE
M.H	MAN HOLE
N.T	NON TIGHT
O.T	OIL TIGHT
SPCG	SPACING
V.L	VERTICAL LADDER
W.T	WATERTIGHT
F.O	FUEL OIL
RE. WT. MH	RECESSED WATERTIGHT MANHOLE
E.J	ERECTION JOINT
BEL	BELOW
D.O	DIESEL OIL



PLAN 3-A

3/8" = 1'-0"

GENERAL NOTES

1. PLANS ARE DRAWN PORT & STBD, STBD DETAILED, PORT OPPOSITE EXCEPT AS NOTED
2. SIZES OF ALL OPNGS. ARE CLEAR SIZES REQ'D
3. ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES
4. FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BHDS, & GRDS, EXACT LOCATIONS WILL BE TAKEN FROM THE STRUCTURAL PLANS.
5. ALL VERTICAL LADDERS & LADDER RUNGS WILL BE MINIMUM 16" WIDE INSIDE OF STRINGERS & RETURNS RESPECTIVELY UNLESS OTHERWISE NOTED.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-20-77	4,5,7,9 1,8 2	1. INDICATED O.T & W.T. PARTS OF BHDS. 36, 45, 61 & 77 2. REF. 25 ADDED FOR PORT RAILS & STANCHIONS 3. ADDED NOTES 3, 4 & 5. ABV ALTS TO SUIT G.G. SHARP APPVL. LTR. DATED MAY 24, 1977	CDS	7/21/77

REFERENCE PLANS

NO.	PLAN NO.	TITLE
25	231-00-03	GUARD RAILS AROUND HATCHES-FWD. FR. 157
24	129-06-09	DETAILS-FIXED GUIDES, HOLDS #1, 5, 5A, 5B, 5C, 6 & 7
23	129-06-07	ARRGT-FIXED GUIDES HOLDS #1, 5, 5A, 5B, 5C, 6 & 7
22	129-01-06	TRANSV BHDS FR 69 & 77
21	129-01-48	TRANSV. SECT. BHDS, FRS & STANCH FR 26-36
20	232-00-06	VERT. LADDERS ABV. INNERBOTTOM FR 153½ FWD
19	232-00-09	INCL. LADDERS IN CARGO HOLDS NO 1, 2, 3, 4 & 8
18	231-00-03	GUARD RAILS AROUND HATCHES. FWD. FR. 157
17	144-00-01	MANHOLE LIST FWD. FR. 157
16	129-10-04	FDN. BOW THRUSTER MOTOR
15	129-06-04	DETAILS-CONVERT GUIDES HOLD #2, 3, 4 & 8
14	129-06-02	ARRGT-CONVERT GUIDES HOLD #2, & 3
13	129-05-01	SHELL EXPANSION - FR. 77 - FWD.
12	129-03-04	TRANSV. FLOORS - FR. 46-77
11	129-01-04	TRANSV. SECT BHDS FR 46-61
10	129-03-30	FORE PEAK FRAMING FR 4-9½
9	129-03-01	FORE PEAK FRAM'G, LONG'L & FLATS. FR. 16½-FWD
8	129-02-50	13'-8" FLAT FR 16½-77½
7	129-01-36	CARGO OIL TANKS - FR. 77½ FWD.
6	129-01-22	LONG'L BHDS. BELOW 2ND DK. FR. 77½ FWD.
5	129-01-05	TRANSV. SECT. BHDS. FR. 62-76
4	129-01-03	TRANSV. SECT. BHDS. FR. 46-60
3	129-01-02	TRANSV. SECT. BHDS. FR. 37-45
2	129-01-01	TRANSV. SECT. BHDS. FR. 17-25
1	H4650-111-10-05	GEN. ARRGT. TANK TOP - FR. 77½ - FWD.

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 22 APRIL 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED T.L. Mellin
REVIEW
APPROVED

PLAN NO. H4650-111-10-09
ALT. NO. 1³

GENERAL ARRANGEMENT 13'-8" FLAT FRS. 77½ - FWD.

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-24-77				
A.B.S.					
U.S.C.G.	5-23-77				
LLOYD'S R.S.					
U.S.P.H.S.					

DATE OF ISSUE

	ALTERATION	—	—	1³
	ENGINEERING DISTRIBUTION	[illegible]	[illegible]	7-26-77
MAIL	OWNERS	2		2
MAIL	AMERICAN BUREAU	3		3
MAIL	LLOYD'S R.S.			
MAIL	U.S.M.A.			
MAIL	U.S NAVY			
MAIL	U.S.C.G.	3		3
MAIL	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	1		1
INSPECTION	AM. BU. INSP.			1
INSPECTION	LLOYD'S INSP.			
INSPECTION	U.S.M.A. INSP.			1
INSPECTION	U.S. NAVY INSP.			
INSPECTION	U.S.C.G. INSP.			1
INSPECTION	CD SCHAUB			1
OFFICE	HULL DRAFT.-21		18	1
OFFICE	MACH. DRAFT.-22		18	2
OFFICE	ELEC DRAFT.-23		18	1
OFFICE	OUTFIT. DRAFT.-25			
OFFICE	ESTIMATING			
OFFICE	21-1 DEPT (WORK)		18	1
MISC.	PRODUCTION (BCD)			
MISC.	ORDER DEPT.			
MISC.	JOINER CONT. YARD			
	TOTAL ENG'R. DIST.	11	4	18
	YARD DISTRIBUTION		[illegible]	7-26-77
YARD	YARD OFFICE			1
YARD	GEO. EASTBURG			1
YARD	PIECE RATE-11			1
YARD	TEST DEPARTMENT			
YARD	QUALITY ASSURANCE			1
YARD	PLANNING		18	7
STRUCTURAL	GROUND ASSEMBLY			4
STRUCTURAL	35 DEPT			2
STRUCTURAL	P. McNAIR			1
STRUCTURAL	H. LEVY			1
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	STRUCT. SUPER			2
STRUCTURAL	OPTICAL DETAIL 45			2
STRUCTURAL	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP-52			1
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1
MACH'Y & OUTFIT.	PIPE DRAFT.-82			2
MACH'Y & OUTFIT.	BOILER SHOP-58			1
MACH'Y & OUTFIT.	OUTSIDE MACH.-60			1
MACH'Y & OUTFIT.	Q-MATL			1
MACH'Y & OUTFIT.	ELECTRIC SHOP-70			
MACH'Y & OUTFIT.	SHEET MET. SHOP-74			
MACH'Y & OUTFIT.	COPPER SHOP 31			
MACH'Y & OUTFIT.	PAINT SHOP-78			1
OTHER	WELDING			
OTHER	MOLD LOFT-41		1	
OTHER	BRACKET SHOP			
	TOTAL YARD DIST		4	32

4650-51-ALT 1³

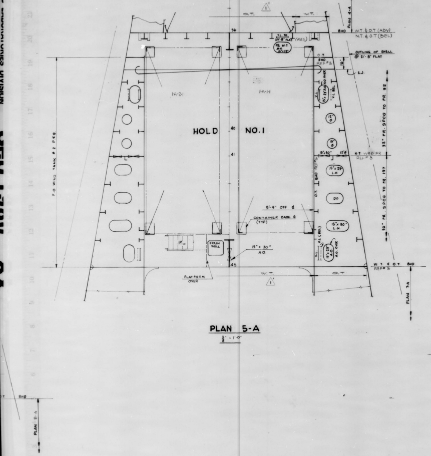
H-9

25.0 SQ. FT.

BUILDERS PLAN NO. H-4650-111-10-09

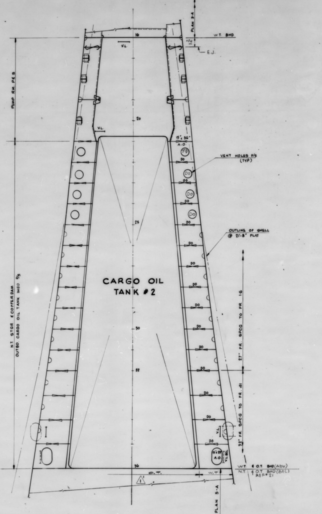
FRAME 1 OF 4

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


HOLD NO.1
1-A-2-1
1-A-1-1
O.T.
W.T.
36
40
41
45
BHD
W.T. & O.T. (ABV)
N.T. & O.T. (BEL)
V.L. TO 29'-8" FLAT (RES)
RE W.T. M.H. 15"x23"
OUTLINE OF SHELL @ 21'-8" FLAT
O.T. BHD REF#3
16"
E.J.
15"x23" A.O. OVER
V.L.
V.L. BEL
12" ø
15" ø
15"x30"
12"ø
N.T. WEB FR REF#3
BHD REF#6
15"x23" L.H.
DO
9'-4" OFF ℄
CONTAINER BASE ℞ (TYP)
15"x30" L.H.
V.L. (BEL)
15"x23" A.O.
A.O. OVER
15" x 30" A.O.
DRAIN WELL
UP
PLATFORM OVER
W.T. & O.T. BHD REF#3
F.O. WING TANK #2 P&S
32" FR. SPCG TO FR. 32
36" FR. SPCG TO FR. 19?
PLAN 4-A
PLAN 7-A
O.T. BHD
PLAN 9-A

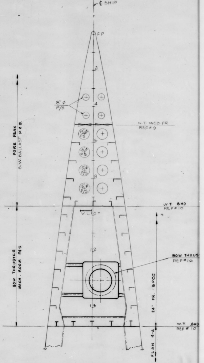
PLAN 5-A

3/8" = 1'-0"


CARGO OIL TANK #2
16
20
25
30
32
36
V.L.
W.T. BHD
12
E.J.
PLAN 3-A
PUMP RM. P&S
N.T. STGR & COFFERDAM
OUTBD. CARGO OIL TANK INBD P/S
15"x36" A.O.
9"ø
VENT HOLES P/S (TYP)
DO
OUTLINE OF SHELL @ 21'-8" FLAT
27" FR. SPCG TO FR. 16
32" FR. SPCG TO FR. 41
15"x23" A.O.
V.L. BEL
W.T. & O.T. BHD (ABV)
N.T. & O.T. BHD (BEL) REF#21
O.T.
W.T.
PLAN 5-A

PLAN 4-A

3/8" = 1'-0"


℄ SHIP
FP
2
4
6
8
10
12
15
8" ø P/S
15" ø P/S
N.T. WEB FR REF#9
W.T. BHD REF#10
V.L.
BOW THRUS REF#16
FORE PEAK S.W. BALLAST P&S
BOW THRUSTER MACH. ROOM P&S
24" FR. SPCG
W.T. BHD REF#10
PLAN 4-4

PLAN 3-A

3/8" = 1'-0"

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

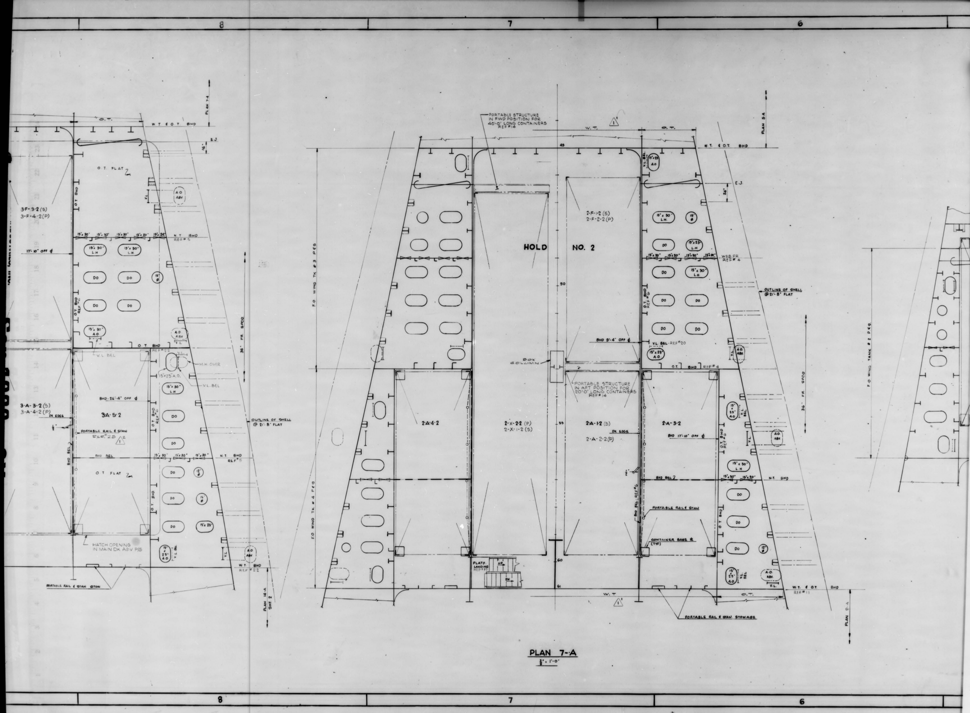
BUILDERS PLAN NO. H-4650-111-10-09

FRAME 2 OF 4

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-09

FRAME 3 OF 4



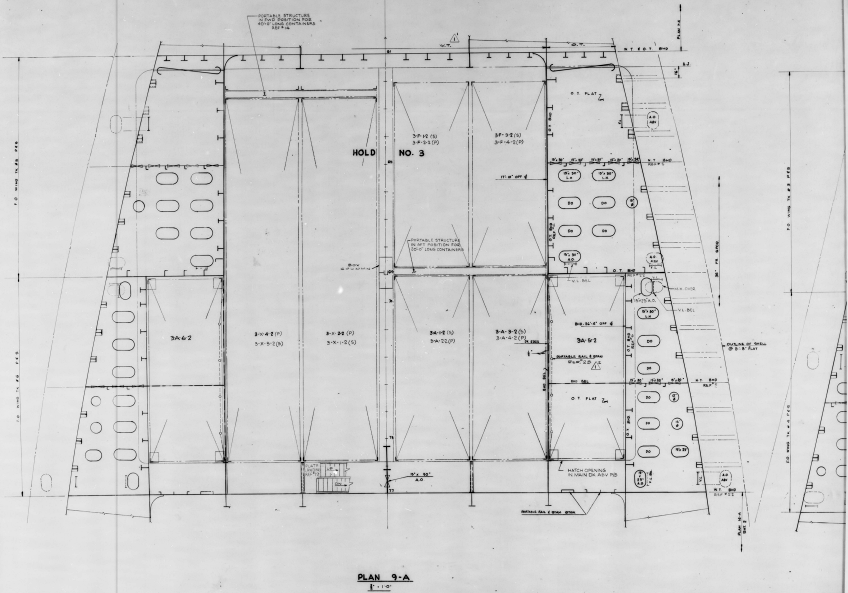
8
7
6
PLAN 7-A
3/8" = 1'-0"
HOLD NO. 2
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS REF#14
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" LONG CONTAINERS REF#14
W.T.
O.T.
W.T. & O.T. BHD
E.J.
2-F-1-2 (S)
2-F-2-2 (P)
2-A-4-2
2-X-2-2 (P)
2-X-1-2 (S)
2-A-1-2 (S)
2-A-2-2 (P)
2-A-3-2
3F-3-2 (S)
3-F-4-2 (P)
3-A-3-2 (S)
3-A-4-2 (P)
3A-5-2
O.T. FLAT
BHD 26'-4" OFF ℄
BHD 9'-4" OFF ℄
BHD 17'-10" OFF ℄
17'-10" OFF ℄
BOX COLUMN
DK EDGE
PORTABLE RAIL & STAN
PORTABLE RAIL & STAN STOWAGE
PORTABLE RAIL & STAN STOW
CONTAINER BASE ℞ (TYP)
HATCH OPENING IN MAIN DK ABV P/S
PLATF. LANDING
UP
DN
WEB FR REF#4
OUTLINE OF SHELL @ 21'-8" FLAT
F.O. WING TK #3 P&S
F.O. WING TK #4 P&S
F.O. WING TANK #2 P&S
36" FR. SPCG
N.T. BHD
O.T. BHD
V.L. BEL
M.H. OVER
15"x30" LH
15"x23" A.O.
A.O. ABV
DO
PLAN 7-4
PLAN 5A
PLAN 14-A SHT 2
PLAN 9-A

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-111-10-09

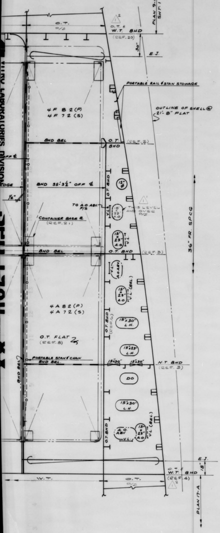
FRAME 4 OF 4


10
9
8
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS REF #14
1
W.T.
O.T.
W.T. & O.T. BHD
PLAN 7-A
E.J.
16"
61
65
69
70
75
77
O.T. FLAT
A.O. ABV
V.L.
O.T. BHD
HOLD NO. 3
3-F-1-2 (S)
3-F-2-2 (P)
3-F-3-2 (S)
3-F-4-2 (P)
15" x 30"
15" x 24"
N.T. BHD REF #5
17'-10" OFF ℄
15" x 30" L.H
DO
15" Ø
12" Ø
O.T. BHD REF #6
15" x 30" A.O.
36" FR. SPCG
F.O. WING TK #3 P&S
F.O. WING TK #5 P&S
F.O. WING TK #6 P&S
F.O. WING TK #4 P&S
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" LONG CONTAINERS
BOX COLUMN
O.T. BHD REF #22
V.L. BEL
M.H. OVER
15"x23" A.O.
3A-6-2
3-X-4-2 (P)
3-X-3-2 (S)
3-X-2-2 (P)
3-X-1-2 (S)
3-A-1-2 (S)
3-A-2-2 (P)
3-A-3-2 (S)
3-A-4-2 (P)
3-A-5-2
BHD-26'-4" OFF ℄
DK EDGE
PORTABLE RAIL & STAN REF #25
BHD BEL
OUTLINE OF SHELL @ 21'-8" FLAT
15" x 23"
15" x 23" A.O.
HATCH OPENING IN MAIN DK ABV P/S
PLATF LANDING REF #19
UP
DN
15" x 30" A.O.
PORTABLE RAIL & STAN. STOW.
W.T. BHD REF #22
PLAN 14-A SHT. 2

PLAN 9-A

1/8" = 1'-0"

10
9
8



PLAN 9-A SHT. 1
O.T. P/S
O.T. & W.T. BHD (REF. 20)
30"
E.J.
PORTABLE RAIL & STAN STOWAGE
OUTLINE OF SHELL @ 21'-8" FLAT
4F 82 (P)
4F 72 (S)
BHD BEL
O.T. BHD (REF. 8)
OFF ℄
BHD 35'-3½" OFF ℄
EDGE
½"
O.T. BHD
12" ø
TO A.O. ABV. P/S
THIS LEVEL AND OVER P/S
V.L.
15" x 23" A.O.
CONTAINER BASE PL (REF. 21)
36" FR. SPCG
BHD BEL
O.T. BHD (REF. 3)
V.L. A.O. ABV.
V.L. (BEL)
4A 82 (P)
4A 72 (S)
O.T. BHD (REF. 6)
15" x 30" L.H.
O.T. FLAT (REF. 8)
15" x 23" L.H.
PORTABLE STAN & CHAIN
BHD BEL.
BHD BEL
15" x 30"
N.T. BHD (REF. 3)
DO
A.O. ABV
E.J.
18"
O.T. & W.T. BHD (REF. 4)
W.T.
O.T. P/S
PLAN 17-A

GENERAL NOTES

1. ALL DIMENSIONS ARE THE SAME P/S UNLESS OTHERWISE NOTED
2. ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES
3. SIZES OF ALL HATCHES, MANHOLES & DOORS ARE CLEAR OPENINGS
4. FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BHDS & GRDS, EXACT LOCATIONS WILL BE TAKEN FROM THE STRUCTURAL PLANS.
5. ALL VERTICAL LADDERS & LADDER RUNGS WILL BE MINIMUM 16" WIDE INSIDE OF STRINGERS & RETURNS RESPECTIVELY UNLESS OTHERWISE NOTED.

ABBREVIATIONS

ABV. - ABOVE
A.O. - ACCESS OPENING
A.T. - AIRTIGHT
BEL. - BELOW
E.J. - ERECTION JOINT
MN. DK - MAIN DECK
N.T. - NON TIGHT
O.T. - OILTIGHT
BHD. - BULKHEAD
R.A. - RETURN AIR
V.L. - VERTICAL LADDER
W.T. - WATER TIGHT
℄ - CENTER LINE
M.H. - MANHOLE

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-21-77	3	1. ACCESS OPNG. FR. 83-84 P/S IN WING TANK NO. 7 INDICATED AS OVER.	C.D.S.	
		3, 6, 9, 12	2. BHDS. 77, 93, 109 & 114.11 (M.11) LABELED W.T. & O.T. AND PARTS OF EACH INDICATED.		
		1, 3, 6, 9, 13	3. CARGO HOLD INSULATION IN HOLDS 5, 5A & 5B REFERENCED. CARGO HOLD INSULATION DWG. ADDED TO REF. LIST. (REF. 23) ALTS. ABV. TO SUIT G. G. SHARP APPVL. LTR. OF MAY 24, 1977.		TLM JW
		1	4. REF. 8 REVISED AND REF. 22 ADDED.		

REFERENCE PLANS

NO.	PLAN NO.	TITLE
23	BSC-4650-1	CARGO HOLD INSULATION
22	129-02-45	21'-8" FLAT - FR. 77 - 114.11 (M.11)
21	129-06-30	LAYOUT & DETS. OF DOUBLER PLTS. ON DKS & FLATS
20	129-01-06	TRANSV. BHDS. FR. 69 & 77
19	129-06-09	DETAILS - FIXED GUIDES HOLD 1 & 5 TO 7
18	129-06-07	ARRGT. FIXED GUIDES HOLDS 1, 5 TO 7
17	232-00-06	VERTICAL LADDERS ABV. I.B. - 153½ - FWD
16	232-00-09	INCL. LADDERS CARGO HOLDS 1, 2, 3, 4 & 8.
15	144-00-01	MANHOLE LIST - FWD. FR. 157
14	129-06-05	DETAILS CONVERT. GUIDES - HOLD 2, 3, 4 & 8
13	129-06-03	ARRGT. CONVERT. GUIDES - HOLD NO. 4 & 8
12	129-05-14	SHELL EXPANSION - FR. 77 - 109
11	129-05-02	SHELL EXPANSION - FR. 109 - 114.43 (M.43)
10	129-03-24	TRANSV. FLOORS - FR. 110 - 114.43 (M.43)
9	129-03-05	TRANSV. FLOORS - FR. 78 - 109
8	129-02-46	13'-8" FLAT - FRS. 77 - 114.11 (M-11)
7	129-01-46	LONG'L BHDS. 35'-3½" OFF ℄ - FR. 109 - 114.43 (M-43)
6	129-01-23	LONG'L BHDS. ON TANK TOP - FR. 77 - 109
5	129-01-32	TRANSV. SECT. BHDS. - FR. 109 - 114.39 (M-39)
4	129-01-09	TRANSV. W.T. BHD 93 & TRANS. FRS. 84 - 108
3	129-01-08	TRANSV. SECT. BHDS - FR. 78 - 92 (M-27)
2	111-10-27	GEN. ARRGT. 13'-8" FLAT - FR. 114.27 - 153½
1	H4650-111-10-09	GEN. ARRGT. 13'-8" FLAT - FR. 77½ - FWD.

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 25 APRIL 1977
DRAWN C/B - S
IN CHARGE
CHECKED
EXAMINED T. L. Mullin
REVIEWED
APPROVED

PLAN NO. H4650-111-10-10
ALT. NO. 1E

GENERAL ARRANGEMENT 13'-8" FLAT FRS. 77½ - 114.27 (M-27)

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-24-77				
A.B.S.					
U.S.C.G.	5-23-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE		
	ALTERATION	—	—	1E
	ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]
MAIL	OWNERS	4		2
	AMERICAN BUREAU	3		3
	LLOYD'S R.S.			
	U.S.M.A.			
	U.S. NAVY			
	U.S.C.G.	3		3
	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	1		1
	AM. BU. INSP.			1
	LLOYD'S INSP.			
	U.S.M.A. INSP.			1
	U.S. NAVY INSP.			
	U.S.C.G. INSP.			1
	CDSCHAUB			1
OFFICE	HULL DRAFT. - 21		1	1
	MACH. DRAFT. - 22		1	2
	ELEC. DRAFT. - 23		1	1
	OUTFIT. DRAFT. - 25			
	ESTIMATING			
	21-1 DEPT CHAW		1	1
MISC.	PRODUCTION (BCD)			
	ORDER DEPT.			
	JOINER CONT. YARD			
	TOTAL ENG'R. DIST.	11	4	18
	YARD DISTRIBUTION	/	[illegible]	7-22-77
YARD	[illegible]			1
	[illegible]			1
	PIECE RATE - 11			1
	TEST DEPARTMENT			
	QUALITY ASSURANCE			1
	[illegible] PLANNING	[illegible]		7
STRUCTURAL	GROUND ASSEMBLY			4
	35 DEPT.			2
	P. McNAIR			1
	H. LEVY			1
	NO. WAY			
	NO. WAY			
	NO. WAY			
	NO. WAY			
	STRUCT. SUPER.			2
	OPTICAL DETAIL - 46			2
	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP - 52			1
	OUTFIT. #1 PIER			1
	PIPE DRAFT. - 82			2
	BOILER SHOP - 58			1
	OUTSIDE MACH. - 60			1
	Q-MATIC			1
	ELECTRIC SHOP - 70			
	SHEET MET. SHOP - 74			
	COPPER SHOP - 81			
	PAINT SHOP - 78			1
OTHER	WELDING			
	MOLD LOFT - 41			1
	BRACKET SHOP			
	TOTAL YARD DIST.	/		32

51- ALT 1E

H- 10

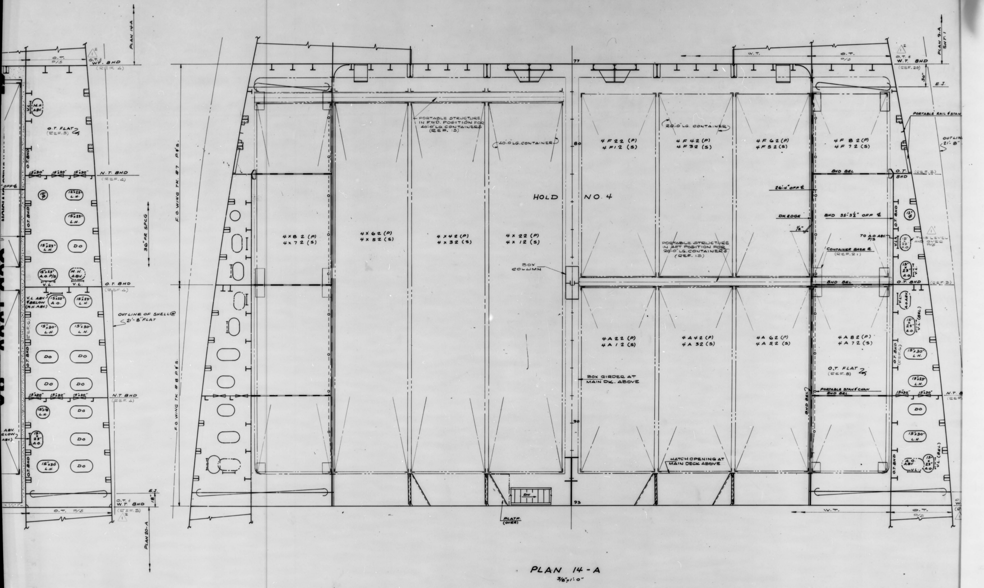
36.0 SQ. FT.

BUILDERS PLAN NO. H-4650-111-10-10

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

FRAME 1 OF 6

5 4 3


PLAN 14-A
O.T. P/S
O.T. & WT. BHD (REF. 4)
V.L. M.H. ABV.
O.T. FLAT (REF. 8)
O.T. BHD
15"x30" 15"x30" 15"x30"
N.T. BHD (REF. 4)
" OFF ℄
12" ⌀
12"x23" L.H.
15"x23" L.H.
15"x23" L.H.
DO
15"x23" A.O. P/S
M.H. ABV.
V.L. V.L.
O.T. BHD (REF. 4)
V.L. ABV. & BELOW (M.H. ABV.)
15"x23" A.O.
15"x23" L.H.
OUTLINE OF SHELL @ 21'-8" FLAT
15"x30" L.H.
15"x30" L.H.
O.T. BHD (REF. 6)
DO DO
DO DO
15"x30" 15"x30" 15"x30"
N.T. BHD (REF. 4)
15"x18" L.H.
DO
ABV. BELOW ABV.)
15" x 23" A.O.
DO
15"x30" L.H.
DO
E.J.
18"
O.T. & W.T. BHD (REF. 5)
O.T. P/S
PLAN 20-A
36" FR SPCG
F.O. WING TK. #7 P&S.
F.O. WING TK. #8 P&S.
PORTABLE STRUCTURE IN FWD. POSITION FOR 40'-0" LG. CONTAINERS (REF. 13)
40'-0" LG. CONTAINER
77
80
90
93
4x82 (P) 4x72 (S)
4x62 (P) 4x52 (S)
4x42 (P) 4x32 (S)
4x22 (P) 4x12 (S)
HOLD NO. 4
BOX COLUMN
BOX GIRDER AT MAIN DK. ABOVE
PLATF. (OVER)
DN
20'-0" LG. CONTAINER
4F22 (P) 4F12 (S)
4F42 (P) 4F32 (S)
4F62 (P) 4F52 (S)
4F82 (P) 4F72 (S)
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" LG. CONTAINERS (REF. 13)
4A22 (P) 4A12 (S)
4A42 (P) 4A32 (S)
4A62 (P) 4A52 (S)
4A82 (P) 4A72 (S)
HATCH OPENING AT MAIN DECK ABOVE
W.T.
O.T. P/S
O.T. & W.T. BHD (REF. 20)
30"
E.J.
PLAN 9-A SHT. 1
PORTABLE RAIL & STAN
OUTLIN 21'-8"
BHD BEL
O.T. BHD (REF. 3)
26'-4" OFF ℄
DK EDGE
1/2"
BHD 35'-3 1/2" OFF ℄
O.T. BHD
12" ⌀
TO A.O. ABV. P/S
V.L. 15" 23" A.O.
THIS LEVEL AND OVER P/S
CONTAINER BASE ℞ (REF. 21)
15" x 23" A.O. V.L.
BHD BEL
O.T. BHD (REF. 3)
V.L. A.O. ABV.
15" x 23" A.O. V.L. (BEL)
O.T. BHD (REF. 6)
15"x30" L.H.
O.T. FLAT (REF. 8)
15"x23" L.H.
PORTABLE STAN & CHAIN BHD BEL.
BHD BEL
15"x30" 15"x30"
N.T. B (REF.
DO
15"x30" L.H.
O.T. BHD
A.O. ABV V.L.
15" x 23" A.O. V.L. (BEL)
W.T.
O.T. P/S

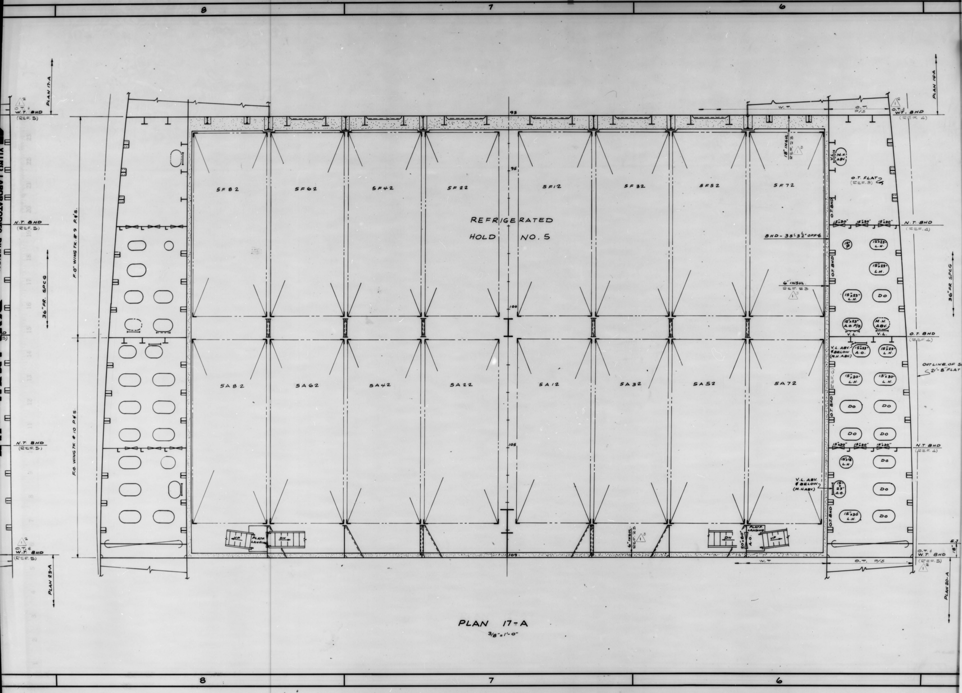
PLAN 14-A
3/16"=1'-0"

5 4 3

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-10

FRAME 2 OF 6

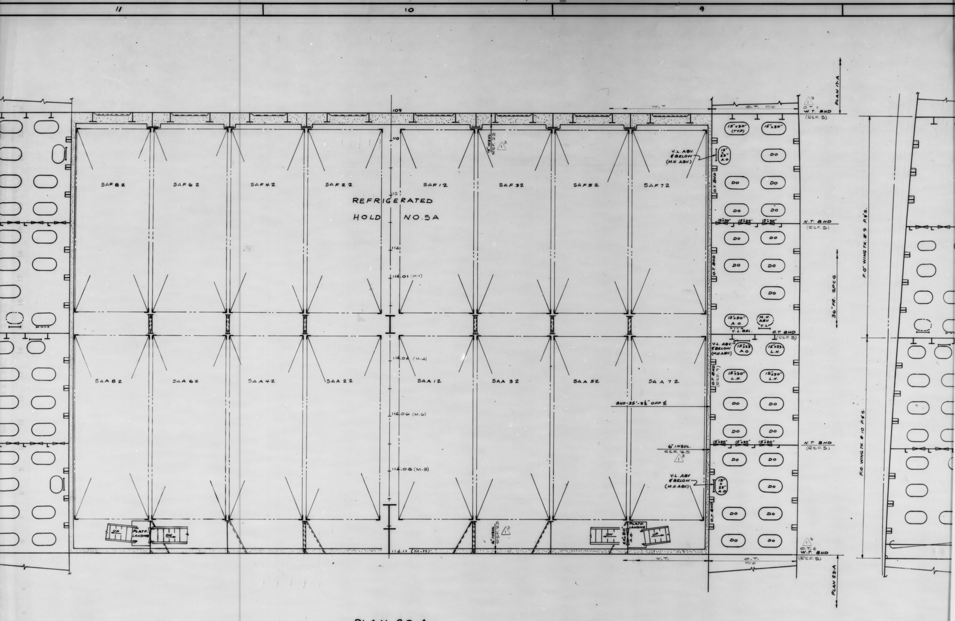

8
7
6
PLAN 17-A
O.T. ¢ W.T. BHD (REF. 5)
N.T. BHD (REF. 5)
N.T. BHD (REF. 5)
O.T. ¢ W.T. BHD (REF. 5)
PLAN 23-A
36" FR. SPCG
F.O. WING TK. # 9 P.&S.
F.O. WING TK. # 10 P.&S.
93
95
100
105
109
5F82
5F62
5F42
5F22
5F12
5F32
5F52
5F72
REFRIGERATED
HOLD NO. 5
5A82
5A62
5A42
5A22
5A12
5A32
5A52
5A72
UP
PLATF. LANDING
DN
6" INSUL. REF. 23
20"x60" A.O.
18" INSUL. REF. 23
BHD-35'-3½" OFF ¢
6" INSUL. REF. 23
W.T.
O.T. P/S
O.T. ¢ WT. BHD (REF. 4)
PLAN 14-A
V.L.
M.H. ABV.
O.T. FLAT (REF. 8)
O.T. BHD
15"x30"
N.T. BHD (REF. 4)
12"φ
12"x23" L.H.
15"x23" L.H.
DO
15"x23" A.O. P/S
O.T. BHD (REF. 4)
V.L. ABV. & BELOW (M.H. ABV.)
15"x23" A.O.
15"x30" L.H.
OUTLINE OF SH 21'-8" FLAT
36" FR. SPCG
15"x18" L.H.
15" x 23" A.O.
E.J.
18"
O.T. ¢ W.T. BHD (REF. 5)
PLAN 20-A

PLAN 17-A
3/8" = 1'-0"

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-10

FRAME 3 OF 6


11
10
9
REFRIGERATED
HOLD NO. 5A
5AF 82
5AF 62
5AF 42
5AF 22
5AF 12
5AF 32
5AF 52
5AF 72
5AA 82
5AA 62
5AA 42
5AA 22
5AA 12
5AA 32
5AA 52
5AA 72
109
110
112
114
114.01 (M-1)
114.04 (M-4)
114.06 (M-6)
114.08 (M-8)
114.11 (M-H)
6" INSUL. REF. 23
V.L. ABV. & BELOW (M.H. ABV.)
15" x 30" (TYP)
15" x 23" A.O.
DO
O.T. BHD
N.T. BHD (REF. 5)
O.T. W.T. BHD (REF. 5)
W.T.
O.T. P/S
BHD - 35'-3 1/2" OFF ℄
15" x 30" A.O.
M.H. ABV. V.L.
V.L. BEL.
15" x 23" L.H.
15" x 30" L.H.
PLATF. LANDING
UP
DN
36" FR. SPCG
F.O. WING TK. # 9 P & S.
F.O. WING TK. # 10 P & S.
PLAN 17-A
PLAN 23-A

PLAN 20-A

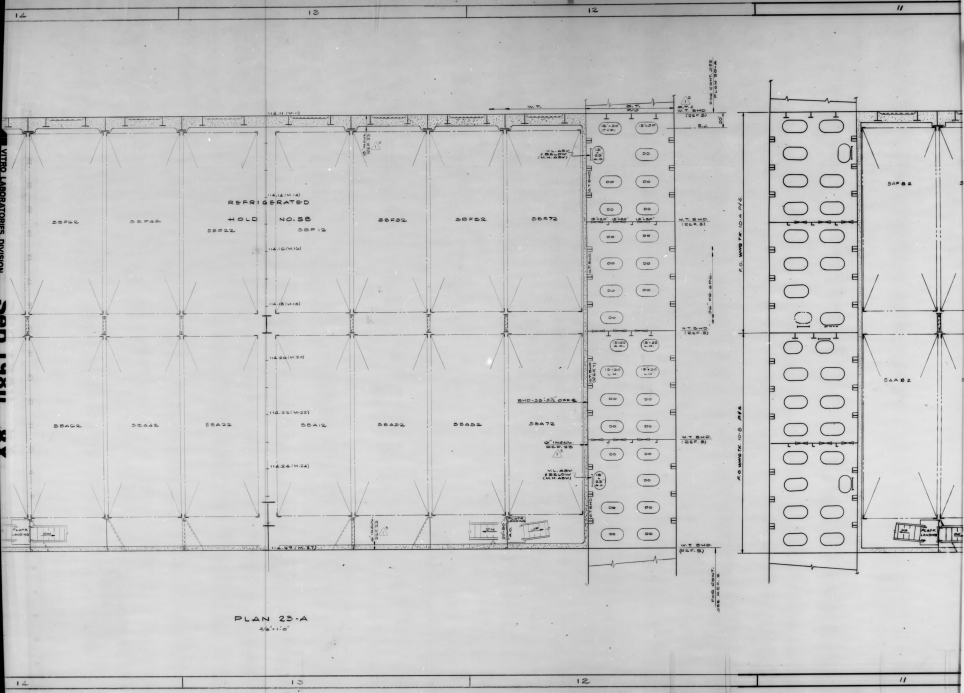
3/8" = 1'-0"

11 10 9

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-10

FRAME 4 OF 6


14
13
12
11
W.T.
O.T.
P/S
O.T. & W.T. BHD. (REF.5)
FOR CONT. SEE PLAN 20-A
20"
E.J.
114.11 (M-11)
114.14 (M-14)
114.16 (M-16)
114.18 (M-18)
114.20 (M-20)
114.22 (M-22)
114.24 (M-24)
114.27 (M-27)
15" INSUL. REF. 23
REFRIGERATED
HOLD NO. 5B
5BF62
5BF42
5BF22
5BF12
5BF32
5BF52
5BF72
5BA62
5BA42
5BA22
5BA12
5BA32
5BA52
5BA72
V.L. ABV. & BELOW (M.H. ABV.)
15"×30" (TYP.)
15"×30"
15" × 23" A.O.
DO
O.T. BHD.
N.T. BHD. (REF.5)
36" FR. SPC.
15"×23" A.O.
15"×23" L.H.
15"×30" L.H.
O.T. BHD. (REF.7)
BHD-35'-3½" OFF ℄
6" INSUL. REF. 23
PLATE LANDING
DN
UP
20"×80" A.O.
6" INSUL. REF. 23
W.T. BHD. (REF.5)
FOR CONT. SEE REF. 2
F.O. WING TK. 10-A P&S.
F.O. WING TK. 10-B P&S.
5AF82
5AA82

PLAN 23-A
3/8"=1'-0"

VITRO LABORATORIES DIVISION

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

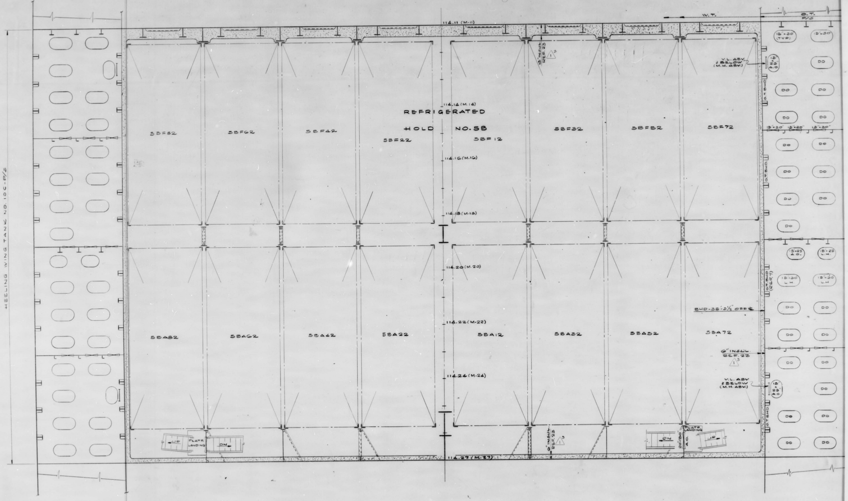
BUILDERS PLAN NO. H-4650-111-10-10

FRAME 5 OF 6

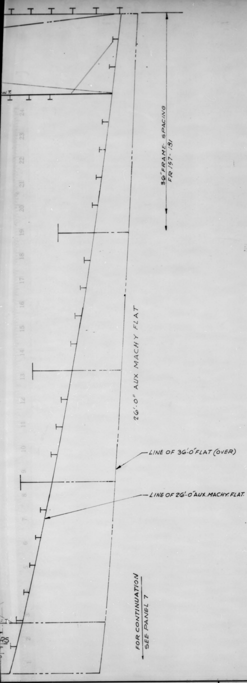
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-10

FRAME 6 OF 6


14
13
12
W.T.
O.T.
P/S
114.11 (M-11)
114.14 (M-14)
114.16 (M-16)
114.18 (M-18)
114.20 (M-20)
114.22 (M-22)
114.24 (M-24)
114.27 (M-27)
REFRIGERATED
HOLD NO. 5B
5BF82
5BF62
5BF42
5BF22
5BF12
5BF32
5BF52
5BF72
5BA82
5BA62
5BA42
5BA22
5BA12
5BA32
5BA52
5BA72
HEELING WING TANK NO. 10C-P/S
15" INSUL. REF. 23
1
6" INSUL. REF. 23
V.L. ABV. & BELOW (M.H. ABV.)
15"x23" A.O.
15"x30" (TYP)
15"x30"
DO
15"x23" A.O.
15"x23" L.H.
15"x30" L.H.
O.T. BHD.
O.T. BHD. (REF. 7)
BHD-35'-3½" OFF ℄
PLATE LANDING
UP
DN
20"x30" A.O.
14
13
12

PLAN 23-A
3/8"=1'-0"


W.T.
36" FRAME SPACING FR 157-181
26'-0" AUX MACHY FLAT
LINE OF 36'-0" FLAT (OVER)
LINE OF 26'-0" AUX. MACHY. FLAT.
FOR CONTINUATION SEE PANEL 7
RS

GENERAL NOTES

1- ALL DIMENSIONS ARE SAME P/S UNLESS OTHERWISE NOTED.
2- ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES:
3. SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC, ARE CLEAR OPENING.
4. FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BULKHEADS, GIRDERS ETC. EXACT LOCATIONS WILL BE TAKEN FROM STRUCTURAL PLANS.
5. ALL VERTICAL LADDERS & LADDER RUNGS SHALL BE MINIMUM 16" WIDE INSIDE STRINGERS & RETURNS RESPECTIVELY, UNLESS OTHERWISE NOTED.

RESERVATIONS.

ABBREVIATIONS

ABV - ABOVE
A.B.L - ABOVE BASE LINE
BHD - BULKHEAD

CD COFFERDAM
℄ CENTERLINE
COAM - COAMING
C.O - CARGO OIL

D.N - DOWN
DR. - DOOR

FR - FRAME
FT - FUME TIGHT
FWD - FORWARD
FWMHBP - FLUSH WATER TIGHT MANHOLE BOLTED PLATE

I.L. INCLINED LADDER
M.H MANHOLE
O.T OIL TIGHT

P/S PORT & STARBOARD

RES. RESERVATIONS
RQAWT HATCH - RAISED QUICK ACTING WATER TIGHT HATCH.
SPCG SPACING
STAN - STANCHION
STL. FT. DR. STEEL FUME TIGHT DOOR
S.S ——— SERVICE SINK
V.L. VERTICAL LADDER

W/ WITH
W.T. WATER TIGHT
W.T.M.H.B.P WATER TIGHT MANHOLE BOLTED PLATE

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	7-25-77	10 12 4	1. REFERENCE NO. FOR GUARD RAIL AROUND SHAFT ALLEY ESCAPE ADDED. 2. VERTICAL LADDER AND MANHOLE OVER AT FR. 234-235 INDICATED. ABV. ALTS TO SUIT G.G. SHARP APPVL. LTR. OF MAY 27, 1977. 3. PORTABLE FLOOR PLTS. INDICATED ON AUX. MACHY FLAT.	C.O.S.	JMW JW 7/29/77
2.	7-24-80	10	1. MONORAIL - FRS. 207-213 ON 20'-0" FLAT - DELETED	CDS	7/24/80 JKM

REFERENCE PLANS

NO.	PLAN NO.	TITLE
30	129-01-40	STRUCTURAL TANKS ENGINE RM
29	129-03-13	PEAK FRAMING, FR 223 AFT & RUDDER HORN (SHT 1)
28	129-03-14	PEAK FRAMING, FR 223 AFT & RUDDER HORN (SHT 2)
27	129-01-18	TRANSV. SECT, BHDS, FRS & STAN FR 196-211
26	129-01-24	LONGL BHDS ON TANK TOP FR 157 AFT
25	129-01-17	TRANSV. SECT, BHDS, FR 185-195
24	129-01-16	TRANSV. W.T. BHD 181 & TRANSV. 171-184 & POT. WAT. TKS
23	129-02-09	FLATS BELOW 2ND DK FR 181 AFT
22	129-01-13	TRANSV. SECT, BHDS, FRS & STAN. FR 157-170
21	129-01-15	TRANSV. SECT, BHDS, FRS & STAN. FR 157-170
20	129-01-14	TRANSV. SECT, BHDS, FRS & STAN. FR 157-170
19	129-02-11	FLATS & STGRS BEL 2ND DK FR 157-181
18	129-01-35	MISC BHDS BELOW MAIN DECK FR 157 AFT
17	234-00-01	DECK COVERING SCHEDULE
16	232-00-21	ENGINEERS' PAINT LKR. 26'-0" FLAT - AFT
15	232-00-01	VERTICAL LADDERS ABV INNER BOTT. FR 153½ AFT
14	232-00-02	INCLINED LADDERS BEL MN DK FR 157 AFT
13	231-00-04	GUARD RAIL AROUND HATCHES - AFT FR 157
12	177-00-01	EXPANDED METAL BHDS. & DETAILS
11	144-00-02	MANHOLE LIST - AFT FR. 157
10	141-00-01	DOOR SCHEDULE
9	129-06-30	LAYOUT OF DOUBLER PLATES
8	129-03-20	SIDE SHELL STGRS 13'-8", 21'-8" & 33'-0" A.B.L.
7	129-03-13	PEAK FRAMING (FR 223 AFT) & RUDDER HORN
6	129-03-10	AFT PEAK FRAMING - FR. 206-222
5	129-01-37	CARGO OIL TANK FR 196-205
4	129-01-16	TRANS. SECTS. BHDS - FRS 171-184
3	121-00-03	RUDDER STOCK ARRGT.
2	111-10-15	GEN. ARRGT. 36'-0" MACHY FLAT & 3RD DK.
1	H4650-111-10-08	GEN. ARRGT. TANK TOP - FR 153½ - AFT

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE APRIL 29, 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-11
ALT. NO. 2'

GENERAL ARRANGEMENT 26'-0" AUX. MACHY FLAT & 20'-0" FLAT

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-27-77				
A.B.S.					
U.S.C.G.	6-21-77				
LLOYD'S R.S.					
U.S.P.H.S.	5-9-77				

DATE OF ISSUE

	ALTERATION	-	-	1	2'
	ENGINEERING DISTRIBUTION	7-29-77	7-27-77	7-29-77	7-25-80
MAIL	OWNERS	4		2	4
MAIL	AMERICAN BUREAU	3		3	
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U S NAVY				
MAIL	U.S.C.G.	3		3	
MAIL	JOINER CONT'R.				
MAIL	USPH	3		3	
INSPECTION	OWNER'S INSP.	1		1	
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.			1	
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CDSCHAUB			1	
OFFICE	HULL DRAFT. - 21		18	1	1
OFFICE	MACH. DRAFT. - 22		18	2	
OFFICE	ELEC. DRAFT. - 23		18	1	
OFFICE	OUTFIT. DRAFT. - 25				
OFFICE	ESTIMATING				
OFFICE	21-1 ENGR.		18	1	
MISC.	PRODUCTION (BCO)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	18	9	21	5
	YARD DISTRIBUTION		4-29-77	8-1-77	
YARD	UAD-OFFICE			1	
YARD	GEO. EASTBURG			1	
YARD	PIECE RATE - 11			1	
YARD	TEST DEPARTMENT				
YARD	QUALITY ASSURANCE			1	
YARD	PLANNING		P	7	
STRUCTURAL	GROUND ASSEMBLY			4	
STRUCTURAL	35 DEPT			2	
STRUCTURAL	P. MCNAIR			1	
STRUCTURAL	H. LEVY			1	
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.			2	
STRUCTURAL	OPTICAL DETAIL - 48			2	
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			2	
MACH'Y & OUTFIT.	BOILER SHOP - 58			1	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			4	
MACH'Y & OUTFIT.	O. MAT'L			1	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 81				
MACH'Y & OUTFIT.	PAINT SHOP - 75			1	
OTHER	WELDING				
OTHER	MOLD LOFT - 41			1	
OTHER	BRACKET SHOP				
	TOTAL YARD DIST.			34	

4650-51 - ALT. 1'

3 2 1 H-11

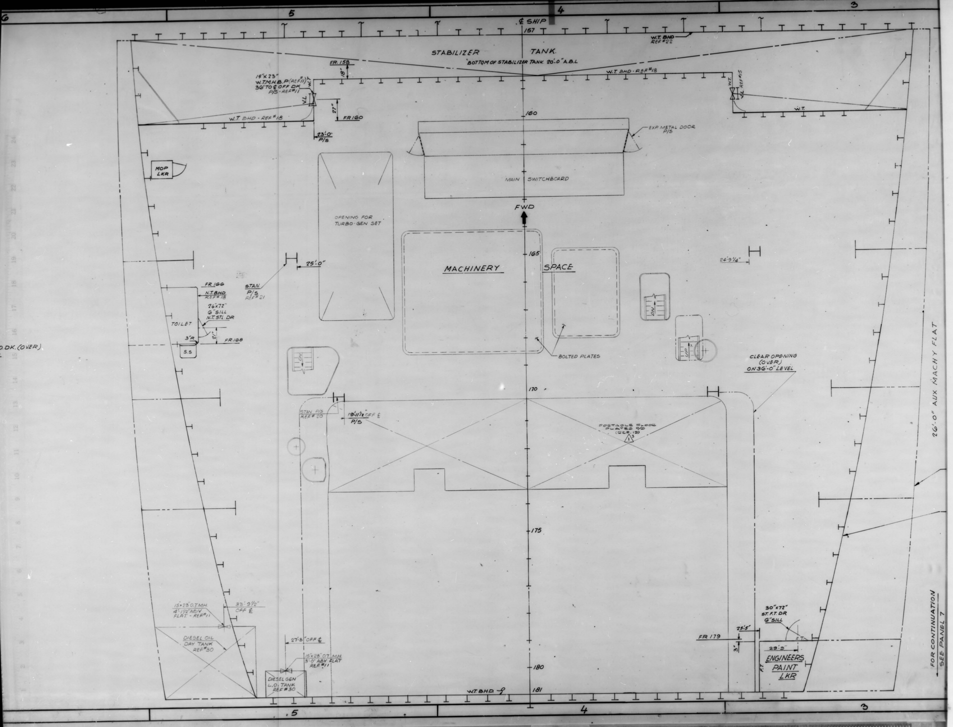
33.5 SQ. FT.

SCHED SUB. 3.14.7

BUILDERS PLAN NO. H-4650-111-10-11

FRAME 1 OF 5

LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

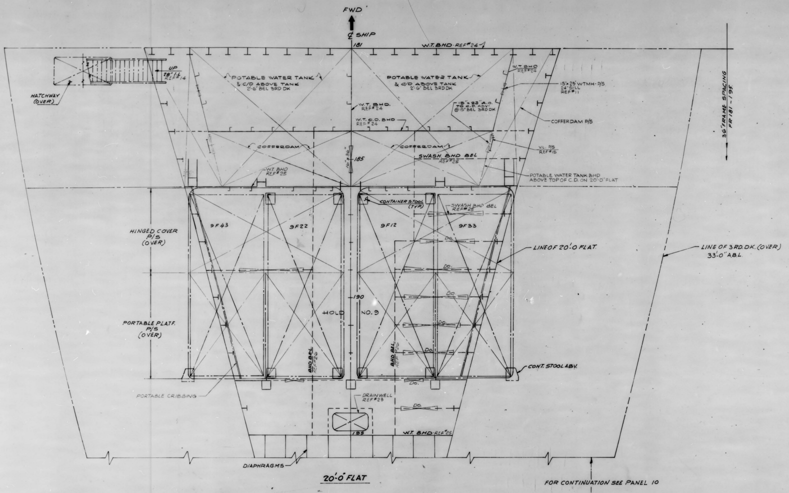

5
4
3
℄ SHIP
157
STABILIZER TANK.
"BOTTOM OF STABILIZER TANK. 20'-0" A.B.L
W.T. BHD REF #22
FR. 158
18"
15"X 23" W.T.M.H.B.P (REF #11) 36" TO ℄ OFF DK P/S - REF #11
W.T.
V.L.
27"
FR 160
W.T. BHD - REF #18
W.T. BHD - REF #18
W.T.
V.L. REF #15
W.T.
23'-0" P/S
160
EXP. METAL DOOR P/S
MOP LKR
MAIN SWITCHBOARD
FWD
OPENING FOR TURBO-GEN SET
165
MACHINERY SPACE
25'-0"
STAN P/S REF #21
24'-9 1/4"
FR 166
N.T. BHD REF #18
24"x72" 6" SILL N.T. STL. DR
TOILET
3"R
21"
FR. 168
S.S
D.DK. (OVER)
DN
UP
DN
BOLTED PLATES
CLEAR OPENING (OVER) ON 36'-0" LEVEL
170
STAN P/S REF # 20
19'-11 1/2" OFF ℄ P/S
PORTABLE FLOOR PLATES P/S (REF. 19)
1
3
26'-0" AUX MACHY FLAT
175
15"x23" O.T. M.H. 4'-1 1/2" ABV FLAT. - REF #11
33'-9 1/2" OFF ℄
DIESEL OIL DAY TANK REF #30
27'-3" OFF ℄
15"x23" O.T. M.H. 3'-0" ABV FLAT REF #11
DIESEL GEN L.O. TANK REF #30
FR 179
25'-5"
3"
30"x72" ST. F.T. DR 6" SILL
F.T.
29'-9"
F.T.
ENGINEERS PAINT LKR
FOR CONTINUATION SEE PANEL 7
180
W.T. BHD ℄
181
.5
4
3

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-111-10-11

FRAME 2 OF 5


FWD
℄ SHIP
181
W.T. BHD · REF# 24
POTABLE WATER TANK
& C/D ABOVE TANK
2'-6" BEL 3RD DK
POTABLE WATER TANK
& C/D ABOVE TANK
2'-6" BEL 3RD DK
UP
28" I.L
REF# 14
HATCHWAY
(OVER)
W.T. BHD
REF# 24
15"×23" WTMH-P/S
24" SILL
REF# 11
W.T. BHD.
REF# 24
15"×23" A.O.
TO C.D. ABV.
@15" BEL 3RD DK
W.T. C.D. BHD
REF# 24
COFFERDAM P/S
36" FRAME SPACING
FR 181 - 195
COFFERDAM
COFFERDAM
16"×36"
185
V.L. P/S
REF# 15
SWASH. BHD BEL
REF# 25
W.T. BHD
REF# 25
POTABLE WATER TANK BHD
ABOVE TOP OF C.D. ON 20'-0" FLAT
CONTAINER STOOL
(TYP)
SWASH BHD BEL
REF# 25
9F43
9F22
9F12
9F33
HINGED COVER
P/S
(OVER)
DO.
LINE OF 20'-0 FLAT.
LINE OF 3RD. DK. (OVER)
33'-0" ABL.
190
HOLD NO. 9
PORTABLE PLATF.
P/S
(OVER)
BHD BEL
REF# 26
BHD BEL
REF# 26
CONT. STOOL ABV.
PORTABLE CRIBBING
DRAINWELL
REF# 23
195
W.T. BHD · REF# 25
DIAPHRAGMS

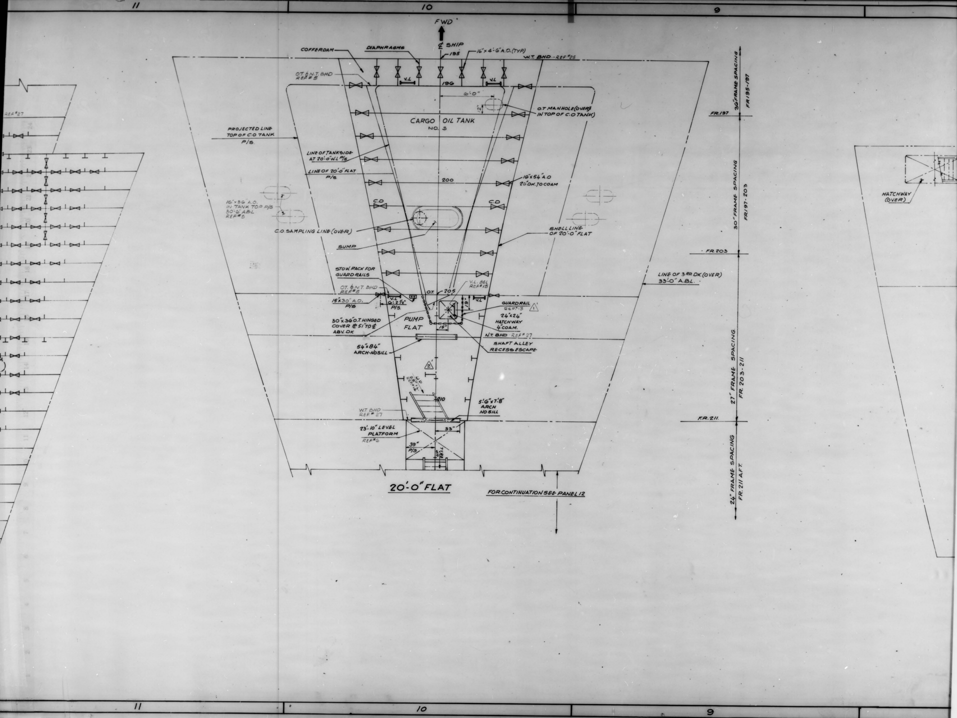
20'-0" FLAT

FOR CONTINUATION SEE PANEL 10

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-11

FRAME 3 OF 5



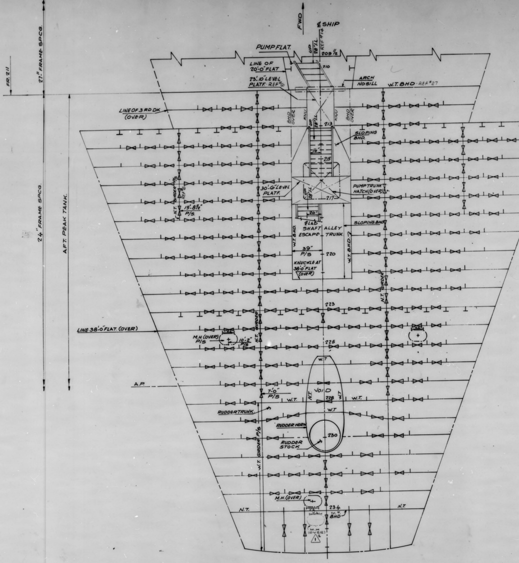
11
10
9
FWD
℄ SHIP
COFFERDAM
DIAPHRAGMS
16"x4'-6"A.O.(TYP)
195
W.T. BHD.-REF#25
O.T. & N.T. BHD REF#5
V.L
196
V.L
6'-0"
12"
O.T MANHOLE(OVER) IN TOP OF C.O TANK)
CARGO OIL TANK NO. 3
PROJECTED LINE TOP OF C.O TANK P/S.
LINE OF TANKSIDE AT 20'-0"W.L P/S
LINE OF 20'-0" FLAT P/S.
200
16"x54"A.O 26"DK.TO COAM
16"x36"A.O. IN TANK TOP P/S 30'-6" ABL REF#5
C.D
C.D
C.O SAMPLING LINE (OVER)
SUMP
SHELL LINE OF 20'-0" FLAT
STOW. RACK FOR GUARD RAILS
O.T. & N.T. BHD REF#5
15"x30" A.O. P/S
V.L 6'-2 1/2" P/S.
O.T.
205
V.L. BEL REF#15
19"
V.L
GUARD RAIL REF#13
1
24"x24" HATCHWAY 4" COAM.
30"x36" O.T. HINGED COVER ℄ 51" TO ℄ ABV. DK
PUMP FLAT
15"
N.T. BHD REF#27
54"x84" ARCH-NO SILL
SHAFT ALLEY RECESS ESCAPE
2
210
5'-6"x7'-8" ARCH NO SILL
W.T. BHD REF#27
23'-10" LEVEL PLATFORM REF#6
33"
39" P/S
UP
20'-0" FLAT
FOR CONTINUATION SEE PANEL 12
LINE OF 3RD DK. (OVER) 33'-0" A.B.L.
36" FRAME SPACING FR 195-197
FR.197
30" FRAME SPACING FR.197-203
FR.203
27" FRAME SPACING. FR. 203-211
F.R.211.
24" FRAME SPACING FR. 211 AFT.
HATCHWAY (OVER)
REF#27
10
9
11

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

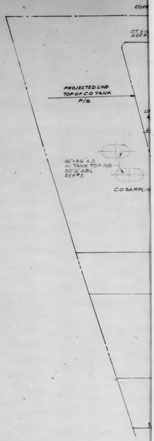
BUILDERS PLAN NO. H-4650-111-10-11

FRAME 4 OF 5

13 12 11


FWD
℄ SHIP
PUMP FLAT.
UP
28° I.L.
REF #14
209 1/2
210
LINE OF 20'-0" FLAT
23'-10" LEVEL PLATF. REF #6
ARCH NO SILL
W.T. BHD. REF #27
FR. 211
27" FRAME SPCG.
24" FRAME SPCG.
AFT. PEAK TANK.
LINE OF 3RD DK (OVER)
BHD OVER
KNU
UP 28° I.L.
213
KNU
BHD OVER
SLOPING BHD.
14"
215
30'-6" LEVEL PLATF.
UP 28° I.L.
217
PUMP TRUNK HATCH (OVER)
N.T. GIRDER P/S REF #6
15'-8 1/2" P/S
20"
℄ LAD
SHAFT ALLEY ESCAPE TRUNK
W.T. BHD.
SLOPING BHD.
W.T. BHD.
39" P/S
220
KNUCKLE AT 38'-0" FLAT (OVER)
N.T. GIRDER
223
LINE 38'-0" FLAT. (OVER)
N.T. GIRDER
M.H (OVER) P/S
10'-2" P/S
225
W.T.
A.P.
N.T.
VOID
W.T.
7'-0" P/S
W.T.
228
W.T.
RUDDER TRUNK
W.T.
RUDDER HORN
230
RUDDER STOCK
W.T. GIRDER P/S
M.H. (OVER)
N.T.
234
W.T. BHD
N.T.
M.H (OVER)
1
2

AFT. PEAK TANK.


COFF
O.T. & N
REF #
PROJECTED LINE TOP OF C.O TANK P/S.
LI
A
L
16"×36" A.O. IN TANK TOP P/S 30'-6" A.B.L REF #5
1
2
C.O. SAMPLIN

13 12 11

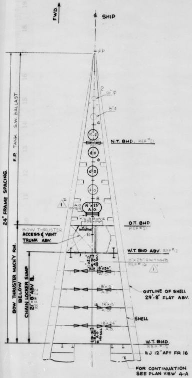
BUILDERS PLAN NO. H-4650-111-10-11

FRAME 5 OF 5

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-22-77	3	1-MANHOLE AT FR. 11 RELOCATED TO PORT SIDE.	C.O.S.	
		3	2-VERT. LADDER AND ACCESS OPENING OVER AT FR. 9 INDICATED.		
		4	3-SUMP AT AFT END OF C.O. TANK NO. 1 INDICATED.		
		4	4-MANHOLE OVER C.O. TANK NO. 2, AT FR. 28-29 SHOWN.		
		4	5-REFERENCE FOR N.T. STGRS FR. 16-26 & 27-36 NOTED		
		6	6-W.T. & O.T. PARTS OF BHD. 45 NOTED.		
		8	7-GUARD CHAIN REF. ADDED ABV. ALTS. TO SUIT G.G. SHARP APPVL. LTR. OF MAY 24, 1977.		


FWD.
℄ SHIP
FP
2
6"ϕ
8"ϕ
4
15"ϕ
N.T. BHD. REF# 21
do
6
do
do
8
1
2
A.O. OVER
15"x23" A.O.
V.L. ABOVE & BELOW
O.T. BHD. REF# 21
V.L.
10
BOW THRUSTER ACCESS & VENT TRUNK ABV.
24" FRAME SPACING.
F.P. TANK S.W. BALLAST
BOW THRUSTER MACH'Y RM. BELOW
CHAIN LOCKER SUMP 21'-8" ABV B. REF# 22
W.T. BHD ABV. REF# 12
15"x23" RWTMHB REF# 16
15"x23" A.O. NO SILL
12
18"x24" A.O.
18"x15" A.O.
14
18"x15" A.O.
18"x24" A.O.
18"x24" A.O. NO SILL
16
OUTLINE OF SHELL 29'-8" FLAT ABV.
SHELL
W.T. BHD. REF# 12
EJ 12" AFT FR 16
FOR CONTINUATION SEE PLAN VIEW 4-A

PLAN VIEW 3-A
FR. 16 FWD.

ABBREVIATIONS

ABV. - ABOVE
A.O. - ACCESS OPENING
A.T. - AIR TIGHT
BEL. - BELOW
C.O. - CARGO OIL
D.O. - DIESEL OIL
E.J. - ERECTION JOINT
F.O. - FUEL OIL
F.P. - FORE PEAK
L.H. - LIGHTENING HOLE
MN.DK. - MAIN DECK
N.T. - NON TIGHT
O.T. BHD. - OIL TIGHT BULKHEAD
P/S - PORT AND STARBOARD
V.L. - VERTICAL LADDER
W.T. - WATER TIGHT
℄ - CENTER LINE
C.D. - COFFERDAM
DN. - DOWN
IL - INCLINED LADDER

GENERAL NOTES

1. STBD. SIDE DETAILED - PORT SIDE SIMILAR ℄ TO OPPOSITE HAND, EXCEPT AS SHOWN.
2. SIZES OF ALL OPENINGS ARE CLEAR. SIZES REQ'D
3. FOR ACCESS OPENINGS IN DECKS, BHDS, ETC, LOCATION & SIZES TO BE TAKEN FROM STRUCTURAL PLANS.

REFERENCE PLANS

NO.	PLAN NO.	TITLE
25	129-01-06	TRANSV BHDS FR 69 & 77
24	129-01-04	TRANSV SECT, BHD & STANCH FR 46-61
23	129-01-48	TRANSV SECT, BHD & STANCH FR 26-36
22	129-01-21	CHAIN LKR BHDS FR 4 - 9½
21	129-03-30	FOREPEAK FRAMING
20	111-10-13	GEN. ARRGT. 21'-8" FLAT - FR. 77½ - 114.27 (157)
19	232-00-06	VERTICAL LADDERS ABV. INNERBOTTOM
18	232-00-09	INCL. LADDERS IN CARGO HOLDS NOS. 1,2,3,4 & 8
17	231-00-04	GUARD RAILS AROUND HATCHES - FWD FR. 157
16	144-00-01	MANHOLE LIST - FR. 157 - FWD.
15	129-06-04	DETAILS - CONVERT GUIDES HOLD# 2,3,4 & 8
14	129-06-02	ARRGT - CONVERT GUIDES HOLD# 2,3,4 & 8
13	129-05-01	SHELL EXPANSION - FR. 77 FWD.
12	129-03-02	FOREPEAK FRMG TRANSVERSES FR 10-16
11	129-03-01	FOREPEAK FRMG. LONG'L & FLATS - FR. 16½ - FWD
10	129-02-49	21'-8" FLAT FR 16-77
9	129-02-20	MAIN DECK PLTG & GIRDERS - FR. 77 - FWD.
8	129-01-39	STRUCTURAL TRUNKS - FWD. FR. 18
7	129-01-36	CARGO OIL TANKS - FR. 77½ FWD.
6	129-01-22	LONG'L BHDS. BELOW 2ND DK. FR. 77½ - FWD.
5	129-01-05	TRANSV. SECTS. BHDS. - FR. 62-76
4	129-01-03	TRANSV. SECTS. BHDS. - FR. 46-60
3	129-01-02	TRANSV. SECTS. BHDS. - FR. 37-45
2	129-01-01	TRANSV. SECTS. BHDS. FR. 17-25
1	H4650-111-10-05	GEN. ARRGT. TANK TOP. FR. 77½ - FWD.

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" : 1'-0" DATE 22 APRIL 1977
DRAWN C/S - RLT IN CHARGE
CHECKED ✓ EXAMINED T.G. Mullin
REVIEW ✓ APPROVED

PLAN NO. H4650-111-10-12 ALT. NO. 1ª

GENERAL ARRANGEMENT 21'-8" FLAT FRS. 77½-FWD.

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-24-77				
A.B.S.					
U.S.C.G.	5-23-77				
LLOYD'S R.S.					
U.S.P.H.S.					

DATE OF ISSUE

	ALTERATION	-	-	1ª
	ENGINEERING DISTRIBUTION	4-25-77	4-25-77	7-26-77
MAIL	OWNERS	4		2
	AMERICAN BUREAU	3		3
	LLOYD'S R.S.			
	U.S.M.A.			
	U.S. NAVY			
	U.S.C.G.	3		3
	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	1		1
	AM. BU. INSP.			1
	LLOYD'S INSP.			
	U.S.M.A. INSP.			1
	U.S. NAVY INSP.			
	U.S.C.G. INSP.			1
	C.D. SCHAUB			1
OFFICE	HULL DRAFT. - 21		1B	1
	MACH. DRAFT. - 22		1B	2
	ELEC. DRAFT. - 23		1B	1
	OUTFIT. DRAFT. - 26			
	ESTIMATING			
	21-1 DEPT (WORK)		1B	1
MISC.	PRODUCTION (SCD)			
	ORDER DEPT.			
	JOINER CONT. YARD			
	TOTAL ENG'R. DIST.	11	4	18
	YARD DISTRIBUTION	/		
YARD	YARD-OFFICE			1
	GEN. FOREMAN			1
	PIECE RATE - 11			1
	TEST DEPARTMENT			
	QUALITY ASSURANCE			1
	PLANNING		1B	7
STRUCTURAL	GROUND ASSEMBLY			4
	35 DEPT			2
	F. McNAIR			1
	H. LEVY			1
	NO. WAY			
	NO. WAY			
	NO. WAY			
	NO. WAY			
	STRUCT. SUPER.			2
	OPTICAL DETAIL - 46			2
	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP - 52			1
	OUTFIT. #1 PIER			1
	PIPE DRAFT. - 82			2
	BOILER SHOP - 58			1
	OUTSIDE MACH. - 60			1
	Q-MATIC			1
	ELECTRIC SHOP - 70			
	SHEET MET. SHOP - 74			
	COPPER SHOP - 51			
	PAINT SHOP - 78			1
OTHER	WELDING			
	MOLD LOFT - 41			1
	BRACKET SHOP			
	TOTAL YARD DIST.	/	4	34

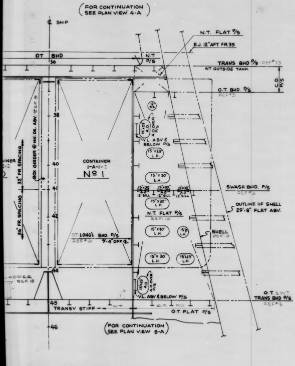
4650-51-A.T. 12

SCHED SUBMIT 5-16-7

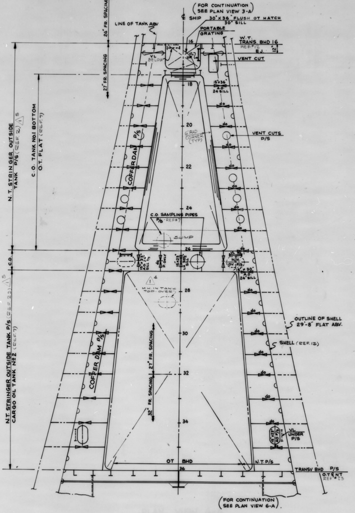
BUILDERS PLAN NO. H-4650-111-10-12

FRAME 1 OF 5

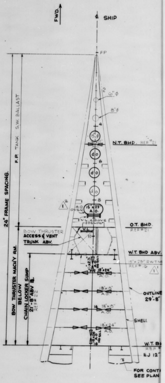
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


(FOR CONTINUATION
SEE PLAN VIEW 4-A
℄ SHIP
N.T. FLAT P/S
E.J. 12" AFT FR 35
OT BHD
36
N.T. P/S
TRANS BHD P/S REF#23
NT OUTSIDE TANK
C.D. P/S
O.T. BHD. P/S
REF#3
12" DIA
38
15"x23" A.O.
A.O. OVER P/S
V.L. ABV & BELOW P/S
15"x23" L.H.
BOX GIRDER @ MN. DK. ABV. REF 9
32" FR. SPACING
36" FR. SPACING
CONTAINER
1-A-1-2
No 1
40
15"x30" L.H.
41
15"x30" A.O. 12" SILL
SWASH BHD. P/S
REF#3
OUTLINE OF SHELL
29'-8" FLAT ABV.
N.T. FLAT P/S
REF.10
42
15"x30" L.H.
15"φ L.H.
SHELL
REF.13
O.T. LONG'L BHD. P/S
REF#6
9'-4" OFF ℄
15"x30" L.H.
15"x23" L.H.
44
LADDER
REF.18
15"x23" A.O.
A.O. OVER P/S
V.L. ABV & BELOW P/S
45
TRANSV STIFF
W.T.
O.T. P/S
O.T. FLAT P/S
O.T. & W.T.
TRANS BHD P/S
REF#3
46
(FOR CONTINUATION
SEE PLAN VIEW 8-A)

PLAN VIEW 6-A
FRS. 36-45


(FOR CONTINUATION
SEE PLAN VIEW 3-A)
℄ SHIP
30"x36" FLUSH OT HATCH
30" SILL
24" FR. SPACING
LINE OF TANK ABV
PORTABLE
GRATING
16
W.T.
TRANS. BHD 16
REF#12
EJ.
12"
VL BELOW
VL UP
VENT CUT
27" FR. SPACING
18
15"x36" A.O. 24 SILL
do
20
6"RAD CORNER (TYP)
VENT CUTS
P/S
N.T. STRINGER OUTSIDE
TANK P/S (REF 2)
C.O. TANK No1 BOTTOM
O.T. FLAT (REF.7)
COFFERDAM P/S
22
24
C.O. SAMPLING PIPES
P/S REF#7
SUMP
26
C.D.
15"x23" A.O. 24" SILL P/S
do P. ONLY
15"x23" LH 30½" SILL
VL
M.H. OV. P/S
15"x30" A.O. 24" SILL
M.H. IN TANK TOP OVER
28
N.T. STRINGER OUTSIDE TANK P/S (REF 23)
CARGO OIL TANK No2 (REF.7)
OUTLINE OF SHELL
29'-8" FLAT ABV.
30
SHELL (REF.13)
COFFER DAM P/S
27" FR. SPACING
32" FR. SPACING
32
34
15"x23" AO P/S
VL
UNDER
P/S
OT BHD
36
N.T. P/S
TRANSV BHD P/S
O.T.& NT
REF#23
(FOR CONTINUATION
SEE PLAN VIEW 6-A)

PLAN VIEW 4-A
FRS. 16-36

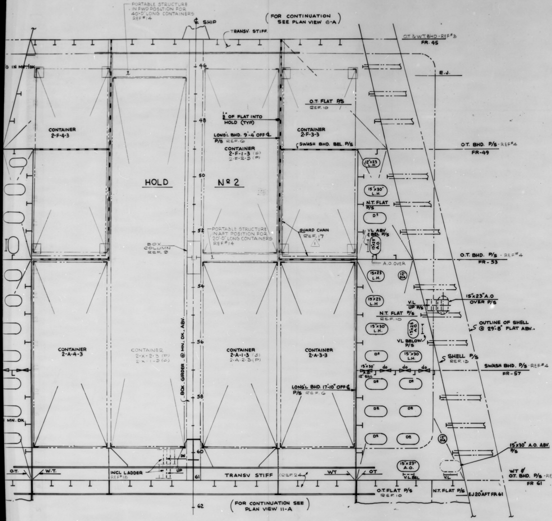

FWD.
℄ SHIP
FP
2
6"φ
8"φ
4
15"φ
18"x15" A.O.
N.T. BHD. REF#21
do
6
8
24" FRAME SPACING.
F.P. TANK S.W. BALLAST
A.O. OVER
15"x23" A.O.
V.L. ABOVE SEE BELOW
O.T. BHD.
REF#21
BOW THRUSTER
ACCESS & VENT
TRUNK ABV.
V.L.
10
W.T. BHD ABV.
15"x23" RWTM
REF#16
15"x23" A.O. NO SILL
18"x24" A.O.
BOW THRUSTER MACH'Y RM.
BELOW
CHAIN LOCKER SUMP
21'-8" ABV B.
REF#22
18"x15" A.O.
OUTLINE
29'-8"
14
18"x15" A.O.
SHELL
18"x24" A.O.
18"x24" A.O. NO SILL
16
W.T. B
REF
EJ 12"
FOR CONTI
SEE PLAN

PLAN VIEW 3-A
FR. 16 FWD.

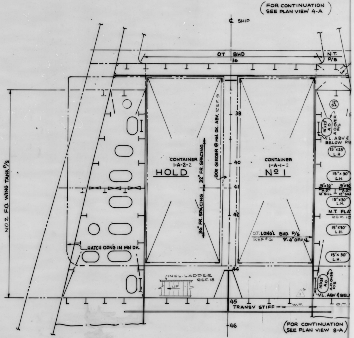
BUILDERS PLAN NO. H-4650-111-10-12

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

FRAME 2 OF 5


PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS REF#14
(FOR CONTINUATION SEE PLAN VIEW 6-A)
℄ SHIP
TRANSV. STIFF.
O.T. & W.T. BHD - REF#3
FR. 45
E.J.
G IN MN. DK
46
48
50
52
54
56
58
60
61
62
CONTAINER 2-F-4-3
1/2" OF FLAT INTO HOLD (TYP)
LONG'L BHD. 9'-4" OFF ℄ P/S REF. 6
CONTAINER 2-F-1-3 (S) 2-F-2-3 (P)
O.T. FLAT P/S REF. 10
CONTAINER 2-F-3-3
SWASH BHD. BEL. P/S
O.T. BHD. P/S - REF#4
FR-49
HOLD
Nº 2
12"x23 L.H.
15"x30" L.H.
N.T. FLAT P/S
D²
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" LONG CONTAINERS REF#14
BOX COLUMN REF. 9
GUARD CHAIN REF. 17
VL ABV & BEL P/S
15"x23" A.O.
A.O. OVER
O.T. BHD. P/S - REF#4
FR - 53
15x23 L.H.
12" DIA
15"x23"A.O OVER P/S
V.L UP P/S
N.T. FLAT P/S REF. 10
OUTLINE OF SHELL @ 29'-8" FLAT ABV.
VL BELOW P/S
15"x30 L.H.
SHELL P/S REF. 13
SWASH BHD. P/S - REF#4
FR - 57
15"x30" A.O. 12" SILL
do
CONTAINER 2-A-4-3
CONTAINER 2-X-2-3 (P) 2-X-1-3 (S)
BOX GIRDER @ MN. DK. ABV.
CONTAINER 2-A-1-3 (S) 2-A-2-3 (P)
CONTAINER 2-A-3-3
LONG'L BHD. 17'-10" OFF ℄ P/S REF. 6
MN. DK.
DN
UP
15"x30" A.O. ABV. P/S
15"x23" A.O.
V.L. BEL
V.L
O.T.
W.T.
INCL LADDER REF#18
TRANSV STIFF (REF. 24)
WT
OT
WT & O.T. BHD. P/S - REF#24
FR 61
O.T. FLAT P/S REF. 10
N.T. FLAT P/S
EJ 20" AFT FR 61
(FOR CONTINUATION SEE PLAN VIEW 11-A)

PLAN VIEW 8-A
FRS. 45- 61

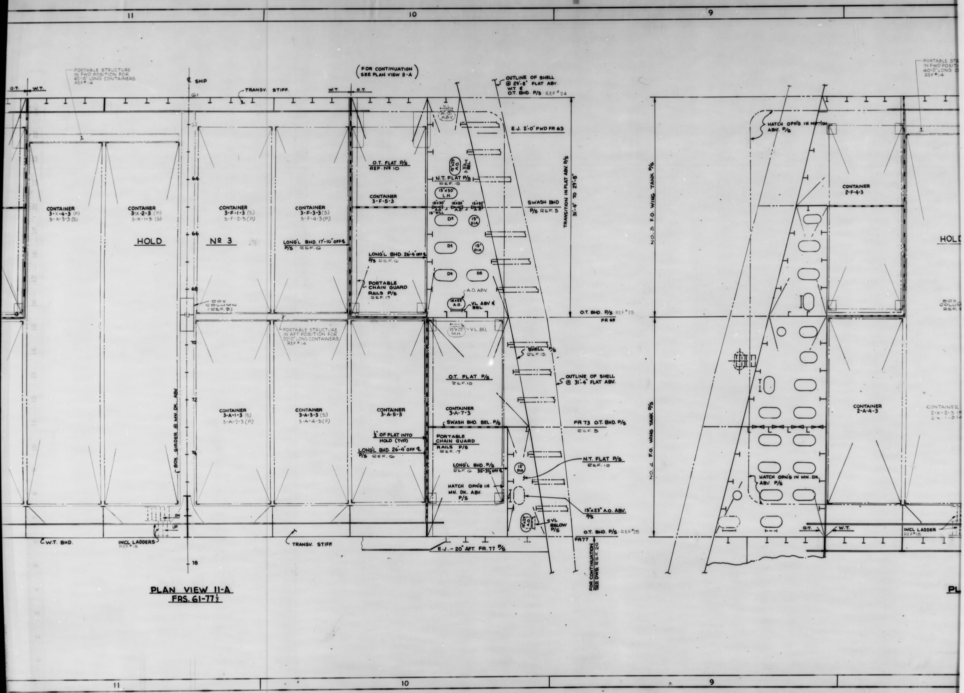

(FOR CONTINUATION SEE PLAN VIEW 4-A)
℄ SHIP
OT BHD
36
N.T. P/S
NO. 2 F.O. WING TANK P/S
12" DIA
15"x23" A.O.
A.O. OVER P/S
V.L. ABV & BELOW P/S
15"x23" L.H.
38
40
41
42
44
45
46
CONTAINER 1-A-2-2
HOLD
32" FR. SPACING
36" FR. SPACING
BOX GIRDER @ MN. DK. ABV. REF. 9
CONTAINER 1-A-1-2
Nº 1
15"x30" L.H.
15"x30" A.O. 12" SILL
N.T. FLAT REF. 10
O.T. LONG'L BHD. P/S REF#6 9'-4" OFF ℄
HATCH OPNG IN MN DK.
INCL. LADDER REF. 18
UP
V.L. ABV & BELOW
TRANSV STIFF
W.T.
O.T.
(FOR CONTINUATION SEE PLAN VIEW 8-A)

PLAN VIEW 6-A
FRS. 36-45

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-12

FRAME 3 OF 5

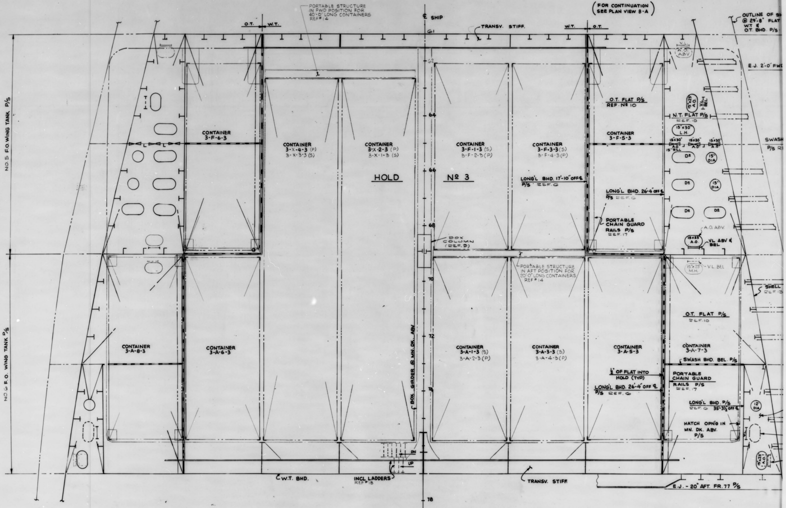

11
10
9
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS REF#14
℄ SHIP
(FOR CONTINUATION SEE PLAN VIEW 8-A)
O.T.
W.T.
TRANSV. STIFF.
W.T.
O.T.
61
62
64
66
68
70
72
74
78
CONTAINER 3-X-4-3 (P) 3-X-3-3 (S)
CONTAINER 3-X-2-3 (P) 3-X-1-3 (S)
CONTAINER 3-F-1-3 (S) 3-F-2-3 (P)
CONTAINER 3-F-3-3 (S) 3-F-4-3 (P)
HOLD
Nº 3
LONG'L BHD. 17'-10" OFF ℄ P/S REF. 6
BOX COLUMN (REF. 9)
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" LONG CONTAINERS REF#14
OUTLINE OF SHELL @ 29'-8" FLAT ABV. W.T & O.T. BHD. P/S REF#24
V.L.
A.O. ABV
E.J. 2'-0" FWD FR 63
O.T. FLAT P/S REF. Nº 10
15"x23" A.O.
V.L. BEL
N.T. FLAT P/S REF. 10
15"x30" L.H.
CONTAINER 3-F-5-3
15"x30" A.O.
15"x30" A.O.
15"x30" A.O.
15" SILL
SWASH BHD P/S REF. 5
D²
15" DIA
D²
15" DIA
D²
D²
TRANSITION IN FLAT ABV. P/S 31'-4" TO 29'-8"
LONG'L BHD. 26'-4" OFF ℄ P/S REF. 6
PORTABLE CHAIN GUARD RAILS P/S REF. 17
A.O. ABV.
15x23 A.O.
VL ABV & BEL
O.T. BHD. P/S REF#25
FR 69
15"x23" M.H.
V.L. BEL
SHELL P/S REF 13
OUTLINE OF SHELL @ 31'-4" FLAT ABV.
O.T. FLAT P/S REF. 10
CONTAINER 3-A-1-3 (S) 3-A-2-3 (P)
CONTAINER 3-A-3-3 (S) 3-A-4-3 (P)
CONTAINER 3-A-5-3
CONTAINER 3-A-7-3
SWASH BHD. BEL. P/S
FR 73 O.T. BHD. P/S REF. 5
½" OF FLAT INTO HOLD (TYP)
PORTABLE CHAIN GUARD RAILS P/S REF. 17
LONG'L BHD. 26'-4" OFF ℄ P/S REF. 6
LONG'L BHD. P/S REF. 6 35'-3½" OFF ℄
12" DIA
N.T. FLAT P/S REF. 10
HATCH OPN'G IN MN. DK. ABV. P/S
V.L.
15"x23" A.O. ABV. P/S
15"x23" A.O.
VL BELOW P/S
O.T. BHD. P/S REF#25
FR77
BOX GIRDER @ MN. DK. ABV
DN
UP
℄ W.T. BHD.
INCL LADDERS REF#18
TRANSV. STIFF
E.J. - 20" AFT. FR. 77 P/S
FOR CONTINUATION SEE DWG. REF. 20
NO. 3 F.O. WING TANK P/S
NO. 4 F.O. WING TANK P/S
HATCH OPN'G IN MN. DK ABV. P/S
CONTAINER 2-F-4-3
HOLD
BOX COLUMN REF. 9
CONTAINER 2-A-4-3
CONTAINER 2-X-2-3 (P) 2-X-1-3 (S)
HATCH OPN'G IN MN. DK. ABV. P/S
O.T.
W.T.
INCL LADDER REF#18
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS REF#14
PL
11
10
9

PLAN VIEW 11-A
FRS. 61-77½

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-12

FRAME 4 OF 5

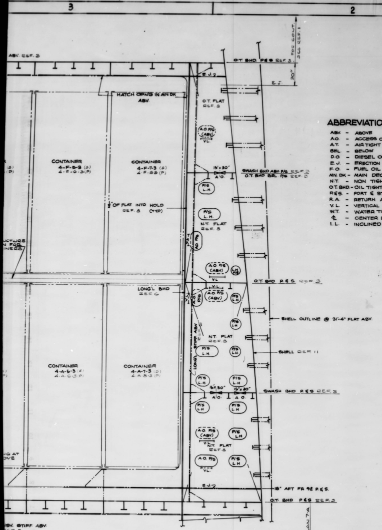

12
11
10
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS REF#14
℄ SHIP
(FOR CONTINUATION SEE PLAN VIEW 8-A)
O.T.
W.T.
TRANSV. STIFF.
W.T.
O.T.
OUTLINE OF SH
@ 29'-8" FLAT
W.T &
O.T. BHD. P/S
E.J. 2'-0" FWD
NO.5 F.O. WING TANK P/S
NO.6 F.O. WING TANK P/S
61
62
64
66
68
70
72
74
78
CONTAINER 3-F-6-3
CONTAINER 3-X-4-3 (P) 3-X-3-3 (S)
CONTAINER 3-X-2-3 (P) 3-X-1-3 (S)
CONTAINER 3-F-1-3 (S) 3-F-2-3 (P)
CONTAINER 3-F-3-3 (S) 3-F-4-3 (P)
CONTAINER 3-F-5-3
HOLD
Nº 3
O.T. FLAT P/S REF. Nº 10
15"x23" A.O.
V.L. BEL
V.L. A.O. ABV
N.T. FLAT P/S REF.10
15"x30" L.H.
15"x30" A.O.
15"x30" A.O.
15"x30" A.O.
15" SILL
Dº
15" DIA
15" DIA
SWASH
P/S R
LONG'L BHD. 17'-10" OFF ℄ P/S REF.6
LONG'L BHD. 26'-4" OFF ℄ P/S REF.6
PORTABLE CHAIN GUARD RAILS P/S REF.17
A.O. ABV.
15x23 A.O.
VL ABV & BEL
BOX COLUMN (REF.9)
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" LONG CONTAINERS REF#14
15"x23" M.H.
V.L. BEL
SHELL REF 13
O.T. FLAT P/S REF.10
CONTAINER 3-A-8-3
CONTAINER 3-A-6-3
℄ BOX GIRDER @ MN. DK. ABV
CONTAINER 3-A-1-3 (S) 3-A-2-3 (P)
CONTAINER 3-A-3-3 (S) 3-A-4-3 (P)
CONTAINER 3-A-5-3
CONTAINER 3-A-7-3
SWASH BHD. BEL. P/S
½" OF FLAT INTO HOLD (TYP)
LONG'L BHD. 26'-4" OFF ℄ P/S REF.6
PORTABLE CHAIN GUARD RAILS P/S REF.17
LONG'L BHD. P/S REF.6 35'-3½" OFF ℄
12" DIA
HATCH OPN'G IN MN. DK. ABV. P/S
V.L.
15"x23" A.O.
DN
UP
℄ W.T. BHD.
INCL LADDERS REF#18
TRANSV. STIFF.
E.J. - 20" AFT. FR. 77 P/S

PLAN VIEW 11-A
FRS. 61-77½

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-12

FRAME 5 OF 5


3
2
ABV. REF. 3
O.T. BHD P&S REF. 3
FOR CONT. SEE REF. 1
30"
E.J.
E.J.
HATCH OPNG IN MN DK ABV.
O.T. FLAT REF. 8
A.O. P/S (ABV)
V.L.
CONTAINER 4-F-5-3 (S) 4-F-6-3 (P)
CONTAINER 4-F-7-3 (S) 4-F-8-3 (P)
15"x30" A.O.
SWASH BHD ABV. P/S REF. 3
O.T. BHD BEL. P/S REF. 3
P/S L.H.
½" OF FLAT INTO HOLD REF. 8 (TYP)
N.T. FLAT REF. 8
A.O. P/S
V.L.
L.H. P/S
O.T. BHD P&S REF. 3
LONG'L BHD REF. 6
SHELL OUTLINE @ 31'-4" FLAT ABV.
LONG'L STIFF ABV
SHELL REF. 11
CONTAINER 4-A-5-3 (S) 4-A-6-3 (P)
CONTAINER 4-A-7-3 (S) 4-A-8-3 (P)
15"x30" A.O.
SWASH BHD P&S REF. 3
18" AFT FR 92 P&S.
O.T. BHD P&S REF. 3
PLAN 7-A
SV. STIFF ABV. REF. 3

ABBREVIATIONS

ABV. - ABOVE
A.O. - ACCESS OPENING
A.T. - AIR TIGHT
BEL. - BELOW
D.O. - DIESEL OIL
E.J. - ERECTION JOINT
F.O. - FUEL OIL
MN. DK - MAIN DECK
N.T. - NON TIGHT
O.T. BHD - OIL TIGHT BULKHEAD
P&S. - PORT & STARBOARD
R.A. - RETURN AIR
V.L. - VERTICAL LADDER
W.T. - WATER TIGHT
℄ - CENTER LINE
I.L. - INCLINED LADDER

· GENERAL NOTES ·

1- ALL DIMENSIONS ARE SAME P/S UNLESS OTHERWISE NOTED.
2- ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3- SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC. ARE CLEAR OPENING.
4- FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BULKHEADS, GIRDERS, ETC, EXACT LOCATIONS WILL BE TAKEN FROM STRUCTURAL PLANS.
5- ALL VERTICAL LADDERS & LADDER RUNGS SHALL BE MINIMUM 16" WIDE INSIDE STRINGERS & RETURNS RESPECTIVELY, UNLESS OTHERWISE NOTED.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	7-25-77	7,10,14 7,10,14	1- BHD. DESIGNATION CHANGED FROM O.T. TO W.T. ON BHDS 109, 114.11 (M.11) & 114.27 (M-27) 2- REFERENCE NUMBER FOR HOLD INSULATION ADDED. ABV. ALTS. TO SUIT G.G. SHARP APPVL. LTR. OF MAY 27, 1977	C.D.S.	JLM

REFERENCE PLANS

NO.	PLAN NO.	TITLE
21	129-06-09	DETAILS FIXED GUIDES-HOLDS 1, 5-7
20	H4650-129-06-07	ARRGT. FIXED GUIDES-HOLDS 1, 5-7
19	BSC-4650-1	ARRGT. REEFER CARGO SPACES
18	232-00-06	VERTICAL LADDERS ABV. INNERBOTTOM
17	232-00-09	INCL. LADDERS IN CARGO HOLDS 1,2,3,4 & 8
16	144-00-01	MANHOLE LIST-FWD. FR. 157
15	141-00-01	DOOR SCHEDULE
14	129-06-04	DETAILS CONVERT. GUIDES-HOLDS 2,3,4 & 8
13	129-06-03	ARRGT. CONVERT. GUIDES-HOLD NO 4 & 8
12	129-05-02	SHELL EXPANSION-FR. 109-114.43 (M.43)
11	129-05-14	SHELL EXPANSION-FR. 77-109
10	129-02-23	MAIN DECK PLTG & GIRDERS-FR. 109-114.44 (M-44)
9	129-02-22	MAIN DECK PLTG & GIRDERS-FR 77-108
8	129-02-45	21'-8" FLAT-FR. 77-114.12 (M-12)
7	129-01-46	LONG'L BHDS. 35'-3½ OFF ℄-FR. 109-114.43 (M-43)
6	129-01-23	LONG'L BHDS. ON TANK TOP-FR. 77-109
5	129-01-52	TRANSV. SECT. BHDS.-FR. 109-114.39 (M-39)
4	129-01-09	TRANSV. W.T. BHD 93 & TRANS. FRS. 94-108
3	129-01-08	TRANSV. SECT. BHDS.-FR. 78-92 (M-93)
2	111-10-14	GEN. ARRGT. 21'-8" FLAT-FR. 114.27-153½
1	H4650-111-10-12	GEN. ARRGT. 21'-8" FLAT-FR. 77½-FWD

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" : 1'-0" DATE 29 APRIL 1977
DRAWN C/B-S IN CHARGE
CHECKED EXAMINED
REVIEWED APPROVED

PLAN NO. H4650-111-10-13 ALT. NO. 1²

GENERAL ARRANGEMENT
21'-8" FLAT
FRS. 77½-114.27 (M-27)

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-27-77				
A.B.S.					
U.S.C.G.	6-21-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE		
	ALTERATION	-	-	1²
	ENGINEERING DISTRIBUTION	4-29-77	4-29-77	7-29-77
MAIL	OWNERS	4		2
	AMERICAN BUREAU	3		3
	LLOYD'S R.S.			
	U.S.M.A.			
	U.S. NAVY			
	U.S.C.G.	3		3
	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	1		1
	AM. BU. INSP.			1
	LLOYD'S INSP.			
	U.S.M.A. INSP.			1
	U.S. NAVY INSP.			
	U.S.C.G. INSP.			1
	CD SCHAUB			1
OFFICE	HULL DRAFT.-21		1B	1
	MACH. DRAFT.-22		1B	2
	ELEC. DRAFT.-23		1B	1
	OUTFIT. DRAFT.-25			
	ESTIMATING			
	21-1 ENGRS		1B	1
MISC.	PRODUCTION (SCD)			
	ORDER DEPT.			
	JOINER CONT. YARD			
	TOTAL ENG'R. DIST.	11	4	18
	YARD DISTRIBUTION		4-29-77	8-1-77
YARD	LAD-OFFICE			1
	GEO. EASTBURG			1
	PIECE RATE-11			1
	TEST DEPARTMENT			
	QUALITY ASSURANCE			1
	PLANNING		1B	7
STRUCTURAL	GROUND ASSEMBLY			4
	35 DEPT			2
	P. MCNAIR			1
	H. LEVY			1
	NO. WAY			
	NO. WAY			
	NO. WAY			
	NO. WAY			
	STRUCT. SUPER.			2
	OPTICAL DETAIL-45			2
	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP-52			
	OUTFIT. #1 PIER			1
	PIPE DRAFT.-82			2
	BOILER SHOP-58			1
	OUTSIDE MACH.-60			2
	Q-MAT'L			1
	ELECTRIC SHOP-70			
	SHEET MET. SHOP-74			
	COPPER SHOP-81			
	PAINT SHOP-78			1
	WELDING			
OTHER	MOLD LOFT-41			1
	BRACKET SHOP			
	TOTAL YARD DIST.	/	9	32

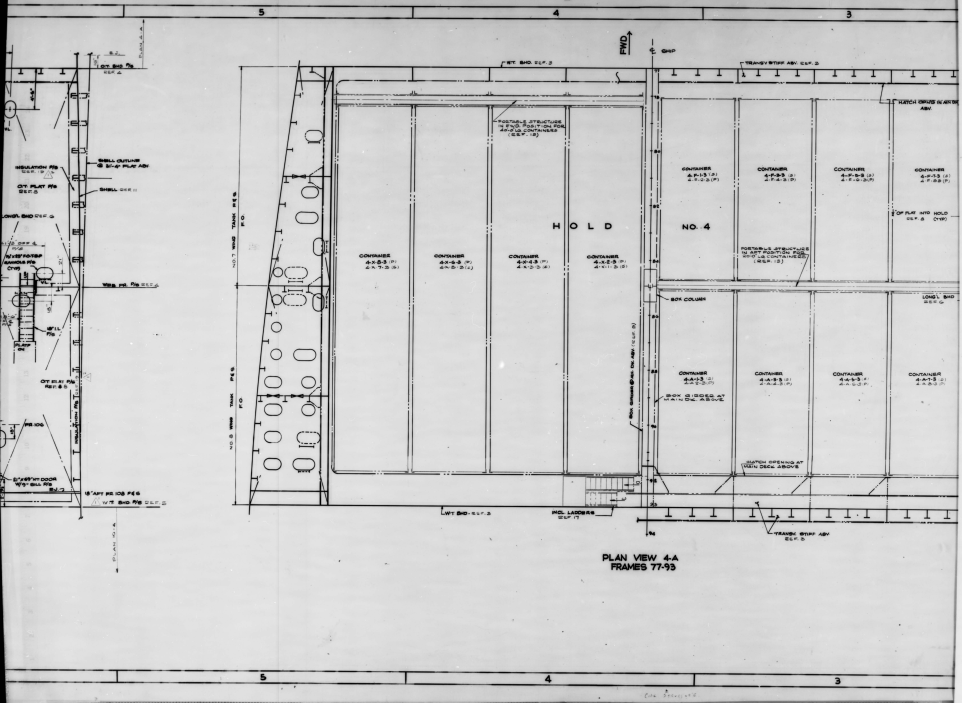
H-13

37.5 SQ. FT.

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-13

FRAME 1 OF 6

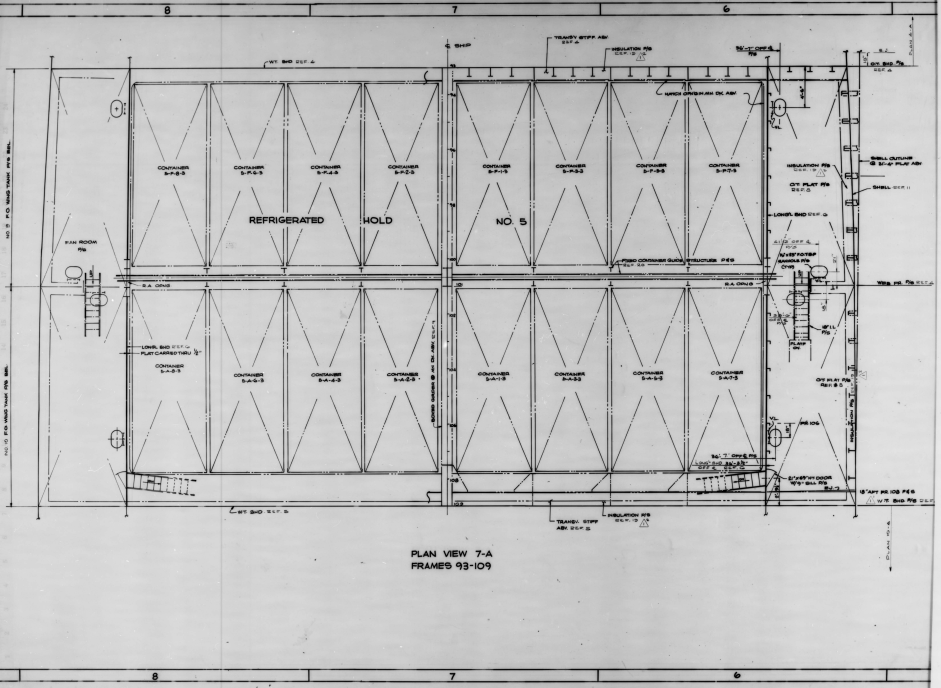

5
4
3
FWD
℄ SHIP
W.T. BHD. REF. 3
TRANSV STIFF ABV. REF. 3
HATCH OPNG IN MN DK ABV.
PORTABLE STRUCTURE IN FWD. POSITION FOR 40'-0" LG CONTAINERS (REF. 13)
CONTAINER 4-F-1-3 (S) 4-F-2-3 (P)
CONTAINER 4-F-3-3 (S) 4-F-4-3 (P)
CONTAINER 4-F-5-3 (S) 4-F-6-3 (P)
CONTAINER 4-F-7-3 (S) 4-F-8-3 (P)
½" OF FLAT INTO HOLD REF. 8 (TYP)
HOLD
NO. 4
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" LG CONTAINERS (REF. 13)
CONTAINER 4-X-8-3 (P) 4-X-7-3 (S)
CONTAINER 4-X-6-3 (P) 4-X-5-3 (S)
CONTAINER 4-X-4-3 (P) 4-X-3-3 (S)
CONTAINER 4-X-2-3 (P) 4-X-1-3 (S)
BOX COLUMN
LONG'L BHD REF. 6
NO. 7 WING TANK P&S F.O.
NO. 8 WING TANK P&S F.O.
BOX GIRDER @ MN. DK. ABV (REF. 9)
BOX GIRDER AT MAIN DK. ABOVE
CONTAINER 4-A-1-3 (S) 4-A-2-3 (P)
CONTAINER 4-A-3-3 (S) 4-A-4-3 (P)
CONTAINER 4-A-5-3 (S) 4-A-6-3 (P)
CONTAINER 4-A-7-3 (S) 4-A-8-3 (P)
HATCH OPENING AT MAIN DECK ABOVE
W.T. BHD. REF. 3
INCL. LADDERS REF. 17
TRANSV. STIFF ABV. REF. 3
77
78
80
82
84
86
88
90
92
93
94
PLAN 4-A
B.J.
O.T. BHD. P/S REF. 4
SHELL OUTLINE @ 31'-4" FLAT ABV.
INSULATION P/S REF. 13
O.T. FLAT P/S REF. 8
SHELL REF. 11
LONG'L BHD REF. 6
15"x23" F.O.-T.&P. MANHOLE P/S (TYP)
WEB FR. P/S REF. 4
18" I.L. P/S
PLATF ON.
O.T. FLAT P/S REF. # 8
INSULATION P/S
FR. 106
21"x69" N.T. DOOR W/9" SILL P/S
B.J.
18" AFT FR. 108 P&S
W.T. BHD. P/S REF. 5
PLAN 10-4
V.L.

PLAN VIEW 4-A
FRAMES 77-93

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-13

FRAME 2 OF 6

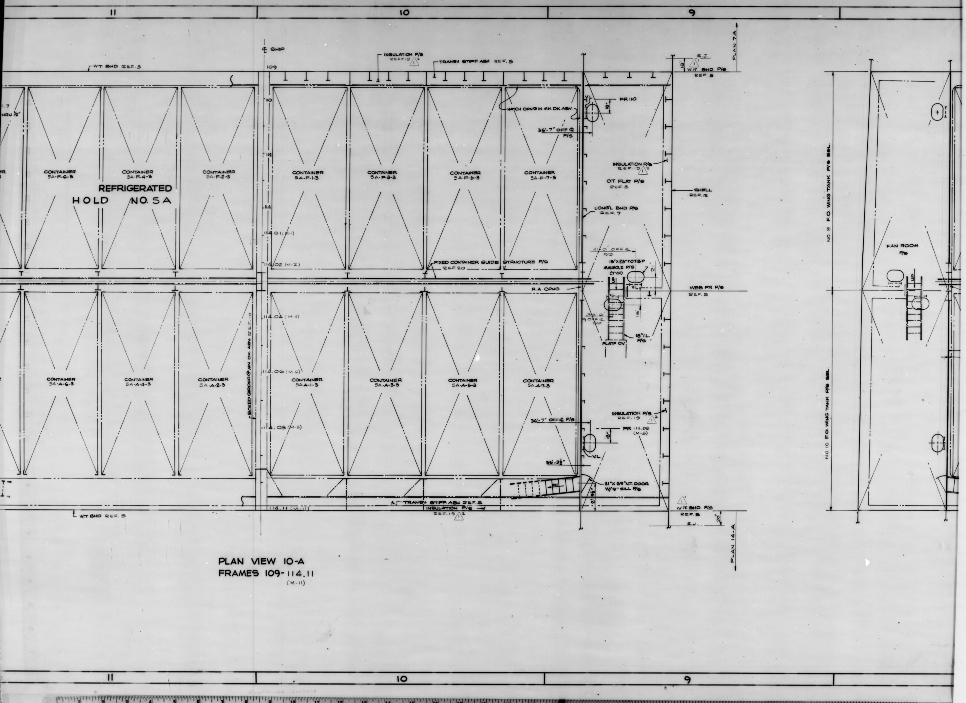

8
7
6
℄ SHIP
W.T. BHD REF. 4
TRANS'V STIFF. ABV. REF. 4
INSULATION P/S REF. 19 1 2
36'-7" OFF ℄ P/S
E.J.
18"
O.T. BHD. P/S REF. 4
PLAN 4-A
HATCH OPN'G IN MN. DK. ABV.
4'-6"
V.L.
SHELL OUTLINE @ 31'-4" FLAT ABV.
INSULATION P/S REF. 19 1 2
O.T. FLAT P/S REF. 8
SHELL REF. 11
LONG'L BHD REF. 6
41'-3" OFF ℄ P/S
15"x23" F.O.T.&P. MANHOLE P/S (TYP)
21"
WEB FR. P/S REF. 4
R.A. OPNG
FIXED CONTAINER GUIDE STRUCTURE P&S REF. 20
CONTAINER 5-F-8-3
CONTAINER 5-F-6-3
CONTAINER 5-F-4-3
CONTAINER 5-F-2-3
CONTAINER 5-F-1-3
CONTAINER 5-F-3-3
CONTAINER 5-F-5-3
CONTAINER 5-F-7-3
REFRIGERATED HOLD NO. 5
FAN ROOM P/S
NO 9 F.O. WING TANK P/S SEL.
NO 10 F.O. WING TANK P/S SEL.
UP
LONGL BHD REF. 6
FLAT CARRIED THRU 1/2"
CONTAINER 5-A-8-3
CONTAINER 5-A-6-3
CONTAINER 5-A-4-3
CONTAINER 5-A-2-3
CONTAINER 5-A-1-3
CONTAINER 5-A-3-3
CONTAINER 5-A-5-3
CONTAINER 5-A-7-3
BOXED GIRDER @ MN DK. ABV. REF. 9
93
94
96
98
100
101
102
104
106
108
109
38'-6" OFF ℄ P/S
18" I.L. P/S
18"
PLATF ON.
O.T. FLAT P/S REF. #8
INSULATION P/S REF. 19 1 2
V.L.
FR. 106
18"
36'-7" OFF ℄ P/S
LONG'L BHD 36'-3 1/2" OFF ℄ REF. 6
DN
21"x69" W.T. DOOR W/9" SILL P/S
E.J. 7
2'-9"
18" AFT FR. 108 P&S
1 W.T. BHD. P/S REF.
PLAN 10-A
W.T. BHD REF. 5
TRANSV. STIFF ABV. REF. 5
INSULATION P/S REF. 19 1 2
8
7
6

PLAN VIEW 7-A
FRAMES 93-109

BUILDERS PLAN NO. H-4650-111-10-13

FRAME 3 OF 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

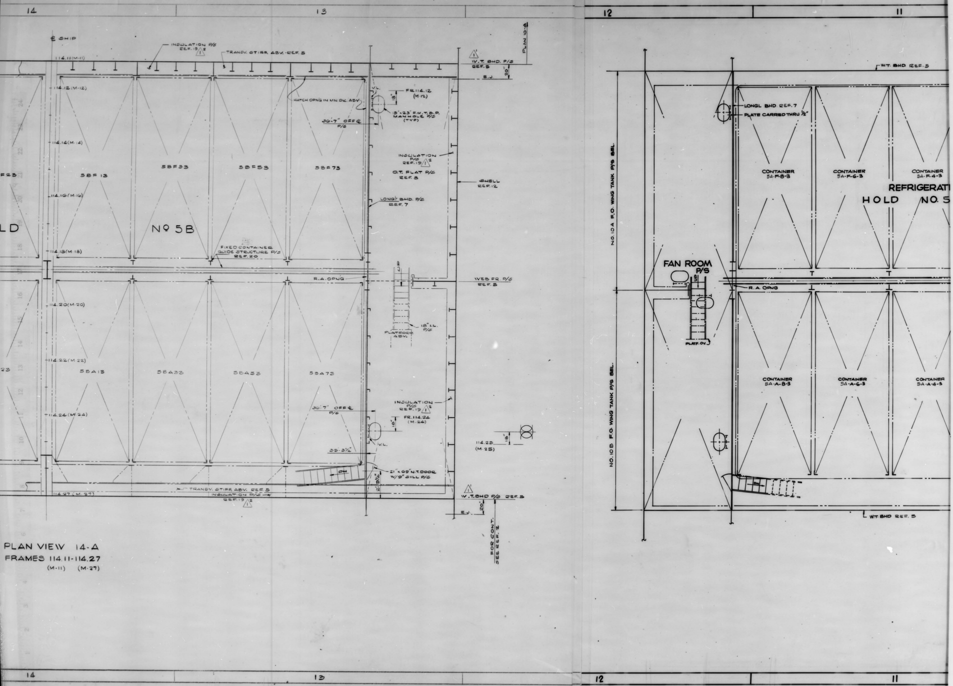

11
10
9
℄ SHIP
109
W.T. BHD REF. 5
INSULATION P/S REF. 13
TRANSV STIFF ABV. REF. 5
E.J.
W.T. BHD. P/S REF. 5
PLAN 7A
FR 110
HATCH OPN'G IN MN. DK. ABV.
36'-7" OFF ℄ P/S
CONTAINER 5A-F-6-3
CONTAINER 5A-F-4-3
CONTAINER 5A-F-2-3
CONTAINER 5A-F-1-3
CONTAINER 5A-F-3-3
CONTAINER 5A-F-5-3
CONTAINER 5A-F-7-3
REFRIGERATED HOLD NO. 5A
INSULATION P/S REF. 13
O.T. FLAT P/S REF. 3
SHELL REF. 12
LONG'L BHD P/S REF. 7
114.01 (M-1)
114.02 (M-2)
FIXED CONTAINER GUIDE STRUCTURE P/S REF. 20
41'-3" OFF ℄ P/S
15"X23" F.O.T.&P. MANHOLE P/S (TYP)
R.A. OPNG
WEB FR. P/S REF. 5
114.04 (M-4)
BOXED GIRDER @ MN. DK. ABV. REF. 10
38'-6" OFF ℄ P/S
18" I.L. P/S
PLATF ON.
114.06 (M-6)
CONTAINER 5A-A-6-3
CONTAINER 5A-A-4-3
CONTAINER 5A-A-2-3
CONTAINER 5A-A-1-3
CONTAINER 5A-A-3-3
CONTAINER 5A-A-5-3
CONTAINER 5A-A-7-3
INSULATION P/S REF. 13
36'-7" OFF ℄ P/S
FR. 114.08 (M-8)
114.08 (M-8)
35'-3½"
V.L.
21"X69" N.T. DOOR W/9" SILL P/S
TRANSV. STIFF. ABV. REF. 5
INSULATION P/S REF. 13
114.11 (M-11)
W.T. BHD. P/S REF. 5
W.T. BHD REF. 5
PLAN 14-A
NO. 9 F.O. WING TANK P/S BEL.
NO. 10 F.O. WING TANK P/S BEL.
FAN ROOM P/S
UP

PLAN VIEW 10-A
FRAMES 109-114.11
(M-11)

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-13

FRAME 4 OF 6

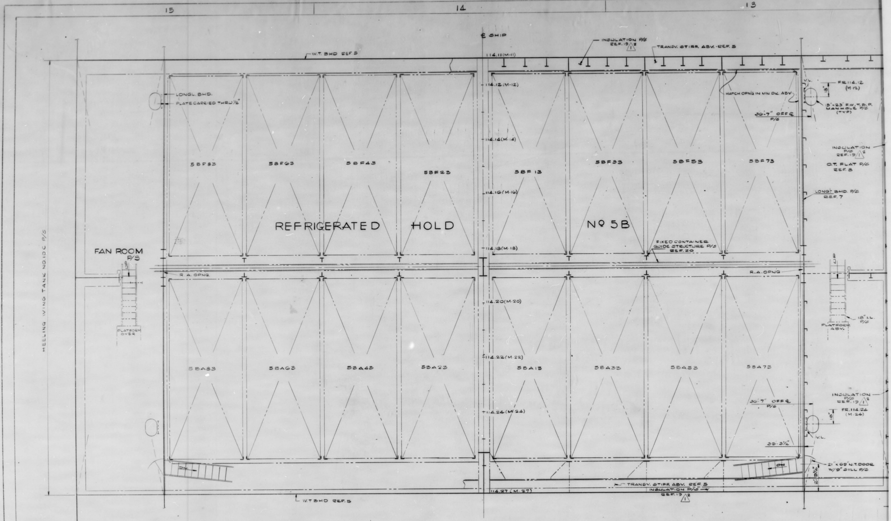

14
13
12
11
℄ SHIP
INSULATION P/S REF. 19 2
TRANSV. STIFF. ABV. REF. 5
PLAN 10-4
W.T. BHD. P/S REF. 5
20"
E.J.
114.11 (M-11)
114.12 (M-12)
114.14 (M-14)
114.16 (M-16)
114.18 (M-18)
114.20 (M-20)
114.22 (M-22)
114.24 (M-24)
114.27 (M-27)
HATCH OPNG IN MN. DK. ABV.
V.L.
18"
FR. 114.12 (M-12)
3'-23" F.W.T.B.P. MANHOLE P/S (TYP)
36'-7" OFF ℄ P/S
INSULATION P/S REF. 19 2
O.T. FLAT P/S REF. 8
SHELL REF. 12
LONGL BHD. P/S REF. 7
F23
5BF13
5BF33
5BF53
5BF73
LD
Nº 5B
FIXED CONTAINER GUIDE STRUCTURE P/S REF. 20
R.A. OPNG
WEB FR. P/S REF. 5
18" I.L. P/S
PLATFORM ABV.
23
5BA13
5BA33
5BA53
5BA73
INSULATION P/S REF. 19 2
36'-7" OFF ℄ P/S
FR. 114.24 (M-24)
18"
114.25 (M-25)
35'-3½"
DN
21" x 69" N.T. DOOR W/9" SILL P/S
TRANSV. STIFF. ABV. REF. 5
INSULATION P/S REF. 13 2
W.T. BHD P/S REF. 5
E.J.
20"
FOR CONT. SEE REF. 2
W.T. BHD REF. 5
NO. 10A F.O. WING TANK P/S SEL.
NO. 10B F.O. WING TANK P/S SEL.
LONGL BHD REF. 7
PLATE CARRIED THRU ½"
CONTAINER 5A-F-8-3
CONTAINER 5A-F-6-3
CONTAINER 5A-F-4-3
REFRIGERAT
HOLD NO. 5
FAN ROOM P/S
R.A. OPNG
PLATF. OV.
CONTAINER 5A-A-8-3
CONTAINER 5A-A-6-3
CONTAINER 5A-A-4-3
DN
W.T. BHD REF. 5

PLAN VIEW 14-A
FRAMES 114.11-114.27
(M-11) (M-27)

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-13

FRAME 5 OF 6


15
14
13
℄ SHIP
W.T. BHD REF 5
INSULATION P/S REF. 19 1 2
TRANSV. STIFF. ABV. REF. 5
114.11 (M-11)
114.12 (M-12)
114.14 (M-14)
114.16 (M-16)
114.18 (M-18)
114.20 (M-20)
114.22 (M-22)
114.24 (M-24)
114.27 (M-27)
LONGL. BHD.
PLATE CARRIED THRU ½"
HATCH OPNG IN MN. DK. ABV.
FR. 114.12 (M-12)
18"
15"×23" F.W.T.B.P. MANHOLE P/S (TYP)
36'-7" OFF ℄ P/S
INSULATION P/S REF. 19 1 2
O.T. FLAT P/S REF. 8
LONGL. BHD. P/S REF. 7
5BF83
5BF63
5BF43
5BF23
5BF13
5BF33
5BF53
5BF73
REFRIGERATED HOLD
Nº 5B
HEELING WING TANK NO. 10C P/S
FAN ROOM P/S
UP
PLATFORM OVER
R.A. OPNG.
FIXED CONTAINER GUIDE STRUCTURE P/S REF. 20
R.A. OPNG
18" I.L. P/S
PLATFORM ABV.
5BA83
5BA63
5BA43
5BA23
5BA13
5BA33
5BA53
5BA73
INSULATION P/S REF. 19 1 2
36'-7" OFF ℄ P/S
FR. 114.24 (M-24)
18"
V.L.
35'-3½"
DN
DN
21"×69" N.T. DOOR W/9" SILL P/S
2'-9½"
TRANSV. STIFF. ABV. REF. 5
INSULATION P/S REF. 19 1 2
W.T. BHD REF. 5

PLAN VIEW 14-A
FRAMES 114.11-114.27
(M-11) (M-27)

15
14
13

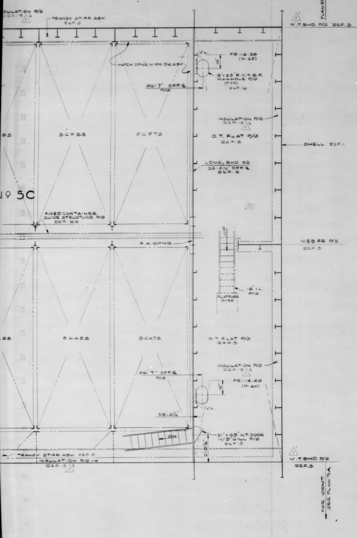
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-13

FRAME 6 OF 6

BUILDERS PLAN NO. H-4650-111-10-14

FRAME 1 OF 6


INSULATION P/S REF.19 1
TRANSV. STIFF. ABV. REF.3
PLAN REF.1
W.T. BHD. P/S REF.3
FR.114.28 (M-28)
HATCH OPNG IN MN DK ABV
V.L.
15"
15"×23" B.W.T.B.P. MANHOLE P/S (TYP) REF.16
36'-7" OFF ℄ P/S
INSULATION P/S REF.19 1
O.T. FLAT P/S REF.8
SHELL REF.11
LONGL. BHD. P/S 35'-3½" OFF ℄ REF.6
5CF53
5CF73
№ 5C
FIXED CONTAINER GUIDE STRUCTURE P/S REF.20
R.A. OPNG.
WEB FR. P/S REF.3
PLATFORM OVER
18" I.L. P/S
5CA53
5CA73
O.T. FLAT P/S REF.8
INSULATION P/S REF.19 1
36'-7" OFF ℄ P/S
FR.114.40 (M-40)
V.L.
35-3½"
21"×63" N.T. DOOR W/3" SILL P/S REF.15
DN
TRANSV. STIFF. ABV. REF.3
INSULATION P/S REF.19
W.T. BHD. P/S REF.3
FOR CONT SEE PLAN 7A

• GENERAL NOTES •

1- ALL DIMENSIONS ARE SAME P/S UNLESS OTHERWISE NOTED.
2- ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3- SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC. ARE CLEAR OPENING.
4- FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BULKHEADS, GIRDERS, ETC, EXACT LOCATIONS WILL BE TAKEN FROM STRUCTURAL PLANS.
5- ALL VERTICAL LADDERS & LADDER RUNGS SHALL BE MINIMUM 16" WIDE INSIDE STRINGERS & RETURNS RESPECTIVELY, UNLESS OTHERWISE NOTED.

• ABBREVIATIONS •

ABV. - ABOVE
A.O. - ACCESS OPENING
A.T. - AIRTIGHT
BEL. - BELOW
D.O. - DIESEL OIL
E.J. - ERECTION JOINT
F.O. - FUEL OIL
MN. DK - MAIN DECK
N.T. - NON TIGHT
O.T. - OILTIGHT
BHD. - BULKHEAD
R.A. - RETURN AIR
V.L. - VERTICAL LADDER
W.T - WATERTIGHT
℄ - CENTERLINE
B.P. - BOLTED PLATE
I.L. - INCLINED LADDER

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-26-77	4,7,11,14 4,7,11,14 14	1- O.T. DESIGNATION CHANGED TO W.T. ON BHDS 114.27(M-27) 114.43 (M.43), 125 & 141. 2- HOLD INSULATION REFERENCE ADDED. 3- EXTENT OF WINGTANK NO. 16 INDICATED. ABV. ALT. TO SUIT G G SHARP APPVL LTR. DATED MAY 27, 1977	C.D.S.	JAM JW

REFERENCE PLANS

NO.	PLAN NO.	TITLE
24	H.B. NO. 108	JOINER INSULATION
23	129-01-13	TRANSV SECTS. BHDS FRS & STANS - FR.157-170
22	129-02-61	21'-8" FLAT - FR. 125-153
21	129-06-09	DETAILS FIXED GUIDES HOLD 1, 5-7
20	H4650-129-06-07	ARRGT. FIXED GUIDES HOLDS 1, 5-7
19	BSC-4650-1	ARRGT. REEFER CARGO SPACES
18	232-00-06	VERTICAL LADDERS ABV. INNERBOTTOM
17	232-00-04	INCL. LADDERS IN REFRIG. CARGO HOLDS
16	144-00-01	MANHOLE LIST - FWD. FR. 157
15	141-00-01	DOOR SCHEDULE
14	129-06-04	DETAILS - CONVERT. GUIDES HOLDS 2,3,4 & 8
13	129-06-03	ARRGT. CONVERT. GUIDES, HOLD NO 4 & 8
12	129-05-03	SHELL EXPANSION - FR. 114.43 (M-43) - 153
11	129-05-02	SHELL EXPANSION - FR. 109 - 114.43 (M-43)
10	129-02-54	MAIN DK. PLTG & GDRS. FR. 114.44 (M-44) - 153
9	129-02-23	MAIN DK. PLTG & GDRS. FR. 109 - 114.44 (M-44)
8	129-02-51	21'-8" FLAT - FRS - 114.11 (M-11) - 125
7	129-01-44	LONGL. BHDS ON TANK TOP - FR. 114.43 (M-43) - 153
6	129-01-46	LONGL. BHD. 35'-3½" OFF ℄ P/S FR. 109 - 114.43 (M-43)
5	129-01-12	TRANS. SECTS. BHDS. FR. 142-156
4	129-01-10	TRANSV. SECTS. BHDS. FR. 114.44 (M-44) - 141
3	129-01-07	TRANSV. SECTS. BHDS. FR. 114.03 (M-3) - 114.43 (M-43)
2	111-10-11	GEN. ARRGT. 26'-0" AUX. MACHY FLAT & 20'-0" FLAT
1	H4650-111-10-13	GEN. ARRGT. 21'-8" FLAT - FR. 77½ - 114.27 (M-27)

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 29 APRIL 1977
DRAWN C/B - S
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-14
ALT. NO. 1

GENERAL ARRANGEMENT 21'-8" FLAT FRS. 114.27-153 (M-27)

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-27-77				
A.B.S.					
U.S.C.G.	6-21-77				
LLOYD'S R.S.					
U.S.P.H.S.					

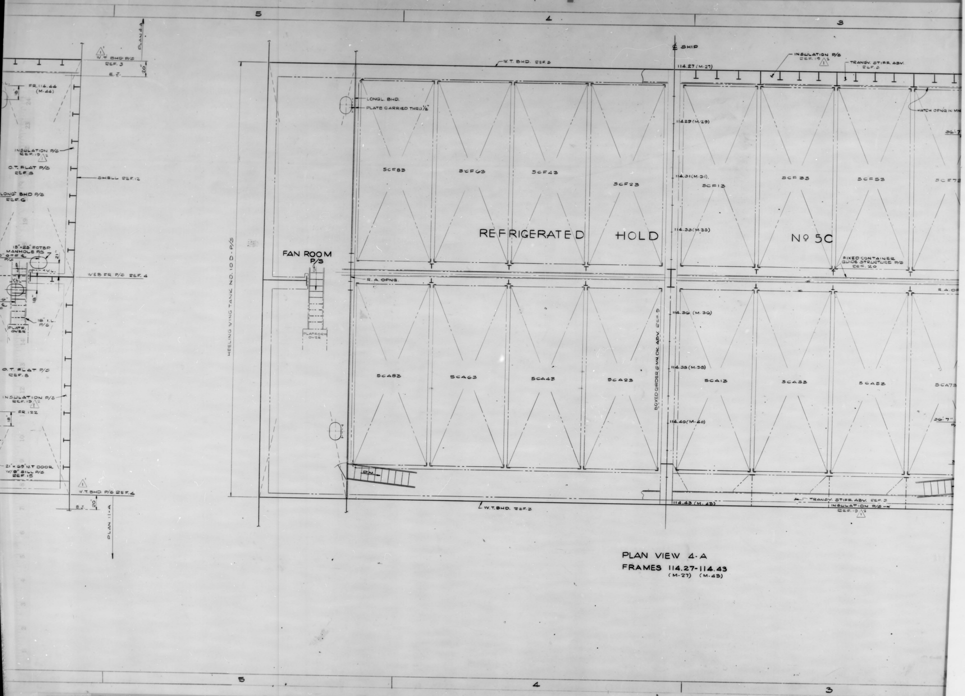
DATE OF ISSUE

	ALTERATION	-	-	1
	ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]
MAIL	OWNERS	4		2
	AMERICAN BUREAU	3		3
	LLOYD'S R.S.			
	U.S.M.A.			
	U.S. NAVY			
	U.S.C.G.	3		3
	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	1		1
	AM. BU. INSP.			1
	LLOYD'S INSP.			
	U.S.M.A. INSP.			1
	U.S. NAVY INSP.			
	U.S.C.G. INSP.			1
	CD SCHAUB			1
OFFICE	HULL DRAFT. - 21		1P	1
	MACH. DRAFT. - 22		1P	2
	ELEC. DRAFT. - 23		1P	1
	OUTFIT. DRAFT. - 25			
	ESTIMATING			
	21-1 ENGRS.		1P	1
MISC.	PRODUCTION (BCD)			
	ORDER DEPT.			
	JOINER CONT. YARD			
	TOTAL ENG'R. DIST.	11	4	18
	YARD DISTRIBUTION	/	[illegible]	[illegible]
YARD	UAD OFFICE			1
	GEO. EASTBURG			1
	PIECE RATE - 11			1
	TEST DEPARTMENT			
	QUALITY ASSURANCE			1
	PLANNING		3P	7
STRUCTURAL	GROUND ASSEMBLY			4
	15 DEPT			2
	P. McNAIR			1
	H. LEVY			1
	NO. WAY			
	NO. WAY			
	NO. WAY			
	NO. WAY			
	STRUCT. SUPER.			2
	OPTICAL DETAIL-45			2
	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP - 52			
	OUTFIT. #1 PIER			1
	PIPE DRAFT. - 62			2
	BOILER SHOP - 58			1
	OUTSIDE MACH. - 60			2
	D-MAT'L			1
	ELECTRIC SHOP - 70			
	SHEET MET. SHOP - 74			
	COPPER SHOP - 51			
	PAINT SHOP - 75			1
OTHER	WELDING			
	MOLD LOFT - 41			1
	BRACKET SHOP			
	TOTAL YARD DIST.	/	[illegible]	[illegible]

4650-51- ALT. 1

H-14

36.3 SQ. FT.

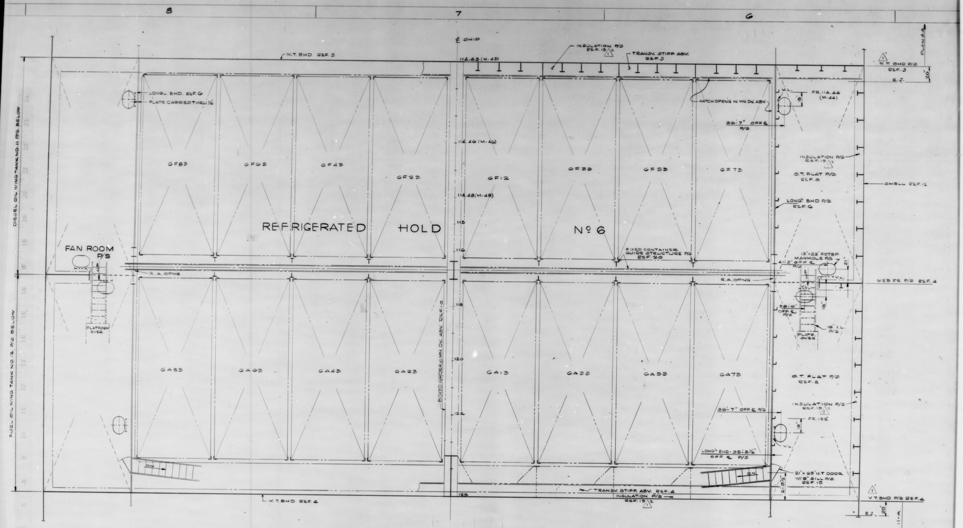

5
4
3
REFRIGERATED HOLD
Nº 5C
FAN ROOM P/S
PLATFORM OVER
℄ SHIP
W.T. BHD. REF.3
INSULATION P/S REF.19
TRANSV. STIFF ABV. REF.3
HATCH OPNG IN MN DK
LONGL. BHD.
PLATE CARRIED THRU ½"
114.27 (M-27)
114.29 (M-29)
114.31 (M-31)
114.33 (M-33)
114.36 (M-36)
114.38 (M-38)
114.40 (M-40)
114.43 (M-43)
5CF83
5CF63
5CF43
5CF23
5CF13
5CF33
5CF53
5CF73
5CA83
5CA63
5CA43
5CA23
5CA13
5CA33
5CA53
5CA73
FIXED CONTAINER GUIDE STRUCTURE P/S REF.20
R.A. OPNG.
BOXED GIRDER @ MN. DK. ABV. REF.5
HEELING WING TANK NO. 10 D - P/S
DN
W.T. BHD. REF.3
TRANSV. STIFF ABV. REF.3
INSULATION P/S REF.19
W.T. BHD P/S REF.3
E.J.
FR.114.66 (M-44)
INSULATION P/S REF.19
O.T. FLAT P/S REF.8
SHELL REF.12
LONG'L BHD P/S REF.6
15"×23" FOTBP MANHOLE P/S
WEB FR P/S REF.4
18" I.L. P/S
PLATE OVER
O.T. FLAT P/S REF.8
INSULATION P/S REF.19
FR.122
21"×69" N.T DOOR W/8" SILL P/S REF.15
W.T. BHD. P/S REF.4
PLAN 11-A
PLAN 4-A

PLAN VIEW 4-A
FRAMES 114.27-114.43
(M-27) (M-43)

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-14

FRAME 2 OF 6

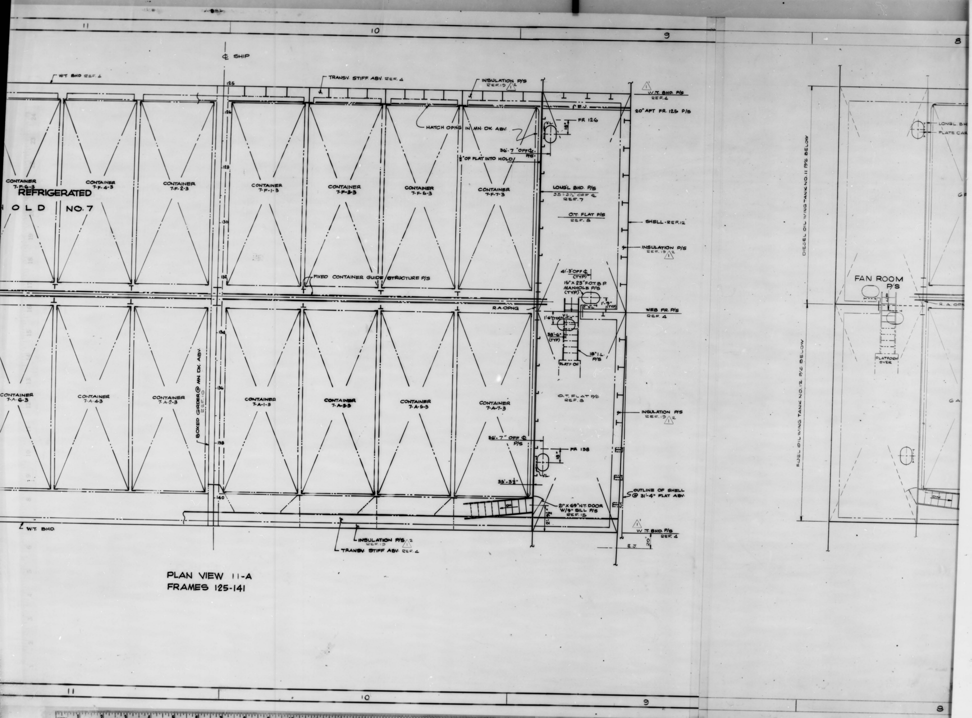

8
7
6
℄ SHIP
W.T. BHD REF. 3
114.43 (M-43)
INSULATION P/S REF. 19 1 2
TRANSV. STIFF ABV. REF. 3
1 W.T. BHD P/S REF. 3
E.J.
20"
PLAN 4-A
LONGL. BHD. REF. 6
PLATE CARRIED THRU ½"
HATCH OPENG IN MN. DK. ABV.
V.L.
FR. 114.44 (M-44)
18"
36'-7" OFF ℄ P/S
114.46 (M-46)
114.48 (M-48)
115
116
118
120
122
125
DIESEL OIL WING TANK NO. 11 P/S BELOW
FUEL OIL WING TANK NO. 12 P/S BELOW
GF83
GF63
GF43
GF23
GF12
GF33
GF53
GF73
REFRIGERATED HOLD Nº 6
INSULATION P/S REF. 19 1 2
O.T. FLAT P/S REF. 8
SHELL REF. 12
LONGL BHD P/S REF. 6
FAN ROOM P/S
FIXED CONTAINER GUIDE STRUCTURE P/S REF. 20
15"×23" FOTBP MANHOLE P/S
41'-3" OFF ℄ P/S
21"
R.A. OPNG
V.L.
WEB FR. P/S REF. 4
38'-6" OFF ℄ P/S
18"
18" I.L. P/S
PLATE OVER
PLATFORM OVER
BOXED GIRDER @ MN. DK. ABV. REF. 10
GA83
GA63
GA43
GA23
GA13
GA33
GA53
GA73
O.T. FLAT P/S REF. 8
INSULATION P/S REF. 19 1 2
36'-7" OFF ℄ P/S
FR. 122
18"
V.L.
LONGL BHD. 35'-3½" OFF ℄ P/S
DN
DN
21"×69" N.T. DOOR W/9" SILL P/S REF. 15
2'-9½"
TRANSV. STIFF. ABV. REF. 4
INSULATION P/S REF. 19 1 2
W.T. BHD REF. 4
1 W.T. BHD. P/S REF. 4
E.J.
20"
PLAN 11-A
8
7
6

PLAN VIEW 7-A
FRAMES 114.43-125

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-14

FRAME 3 OF 6

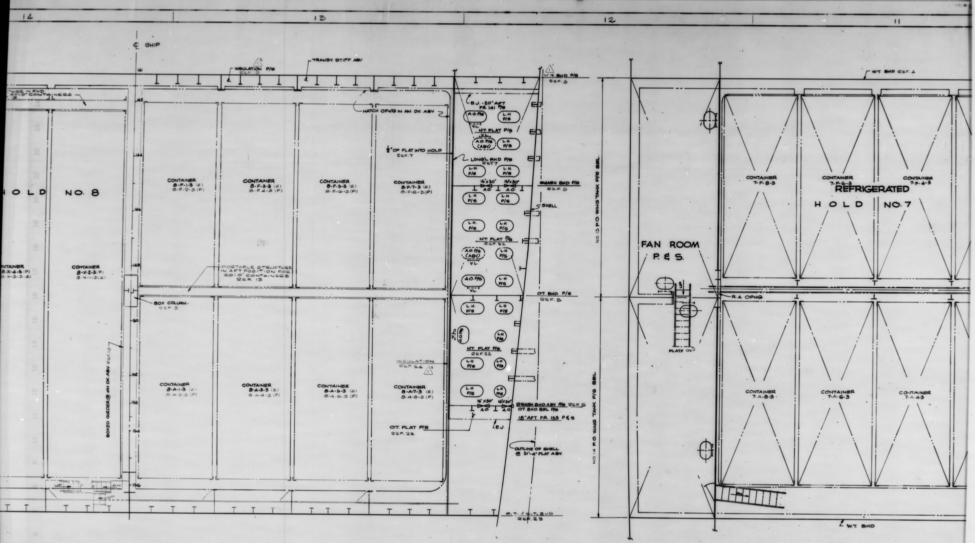

11
10
9
8
℄ SHIP
W.T. BHD REF. 4
TRANSV. STIFF ABV. REF. 4
INSULATION P/S REF. 13 2
1
W.T. BHD. P/S REF. 4
20" APT FR. 125 P/S
E.J.
FR 126
HATCH OPNG IN MN. DK. ABV.
36'-7" OFF ℄ P/S
½" OF PLAT INTO HOLD
REFRIGERATED
HOLD NO. 7
CONTAINER 7-F-6-3
CONTAINER 7-F-4-3
CONTAINER 7-F-2-3
CONTAINER 7-F-1-3
CONTAINER 7-F-3-3
CONTAINER 7-F-5-3
CONTAINER 7-F-7-3
LONG'L BHD. P/S 35'-3½" OFF ℄ REF. 7
O.T. FLAT P/S REF. 8
SHELL - REF. 12
INSULATION P/S REF. 13 2
41'-3" OFF ℄ (TYP)
15" X 23" F.O.T.B.P. MANHOLE P/S (TYP)
FIXED CONTAINER GUIDE STRUCTURE P/S
1'-9" (TYP)
R.A. OPNG
WEB FR. P/S REF. 4
1'-6" (TYP)
38'-6" (TYP)
18" I.L. P/S
PLATF OV.
BOXED GIRDER @ MN. DK. ABV. REF. 10
CONTAINER 7-A-6-3
CONTAINER 7-A-4-3
CONTAINER 7-A-2-3
CONTAINER 7-A-1-3
CONTAINER 7-A-3-3
CONTAINER 7-A-5-3
CONTAINER 7-A-7-3
O.T. FLAT P/S REF. 8
INSULATION P/S REF. 13 2
36'-7" OFF ℄ P/S
FR 138
18"
35'-3½"
OUTLINE OF SHELL @ 31'-4" FLAT ABV.
DN
21" X 69" N.T. DOOR W/9" SILL P/S REF. 15
2'-9½"
W.T. BHD. P/S REF. 4
E.J.
20"
W.T. BHD.
INSULATION P/S REF. 13 2
TRANSV. STIFF ABV. REF. 4
125
126
128
130
132
134
136
138
140
DIESEL OIL WING TANK NO. 11 P/S BELOW
FUEL OIL WING TANK NO. 12 P/S BELOW
FAN ROOM P/S
LONG'L BH
PLATE CAR
R.A. OPN
PLATFORM OVER
GA

PLAN VIEW 11-A
FRAMES 125-141

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-14

FRAME 4 OF 6


14
13
12
11
℄ SHIP
INSULATION P/S
REF. 15
TRANSV. STIFF ABV
TURE IN FWD.
40'-0" CONTAINERS
REF. 13
HATCH OPN'G IN MN. DK. ABV.
½" OF FLAT INTO HOLD
REF. 7
141
142
144
146
148
150
152
153
154
156
HOLD NO. 8
CONTAINER
8-F-1-3 (S)
8-F-2-3 (P)
CONTAINER
8-F-3-3 (S)
8-F-4-3 (P)
CONTAINER
8-F-5-3 (S)
8-F-6-3 (P)
CONTAINER
8-F-7-3 (S)
8-F-8-3 (P)
CONTAINER
8-X-4-3 (P)
8-X-3-3 (S)
CONTAINER
8-X-2-3 (P)
8-X-1-3 (S)
PORTABLE STRUCTURE
IN AFT POSITION FOR
20'-0" CONTAINERS
REF. 13
BOX COLUMN
REF. 5
BOXED GIRDER @ MN DK. ABV. REF. 10
INSULATION
REF. 24
CONTAINER
8-A-1-3 (S)
8-A-2-3 (P)
CONTAINER
8-A-3-3 (S)
8-A-4-3 (P)
CONTAINER
8-A-5-3 (S)
8-A-6-3 (P)
CONTAINER
8-A-7-3 (S)
8-A-8-3 (P)
O.T. FLAT P/S
REF. 22
W.T. BHD. P/S
REF. 5
E.J. -20" AFT
FR. 141 P/S
A.O. P/S
L.H P/S
V.L.
N.T. FLAT P/S
A.O. P/S (ABV)
LONG'L BHD. P/S
REF. 7
15"x30"
A.O.
SWASH BHD P/S
REF. 5
SHELL
N.T. FLAT P/S
REF. 22
O.T. BHD. P/S
REF. 5
SWASH BHD. ABV. P/S REF. 5
O.T. BHD. BEL. P/S
18" AFT. FR. 153 P & S
E.J.
OUTLINE OF SHELL
@ 31'-4" FLAT ABV.
O.T. & W.T. BHD
REF. 23
NO. 13 F.O. WING TANK P/S BEL.
NO. 14 F.O. WING TANK P/S BEL.
FAN ROOM
P. & S.
PLATF ON
R.A. OPNG
W.T. BHD REF. 4
W.T. BHD.
REFRIGERATED
HOLD NO. 7
CONTAINER
7-F-8-3
CONTAINER
7-F-6-3
CONTAINER
7-F-4-3
CONTAINER
7-A-8-3
CONTAINER
7-A-6-3
CONTAINER
7-A-4-3

PLAN VIEW 14-A
FRAMES 141-157

11600 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

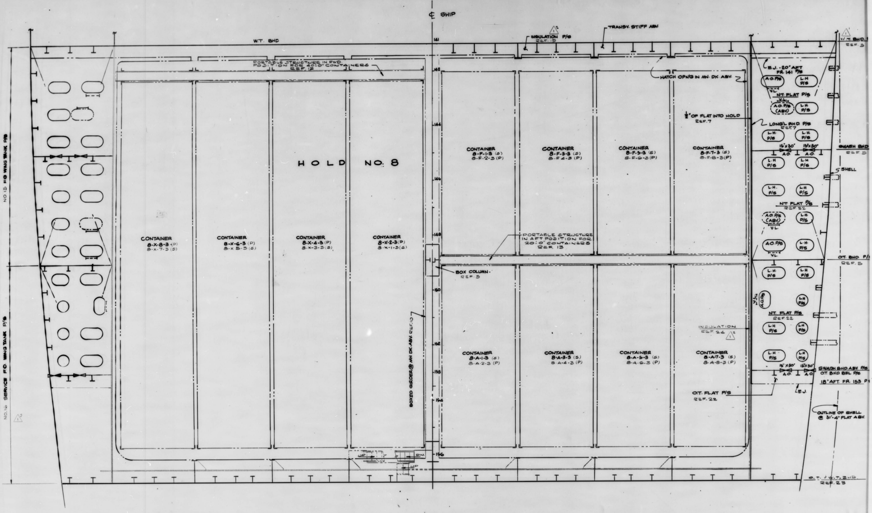
BUILDERS PLAN NO. H-4650-111-10-14

FRAME 5 OF 6

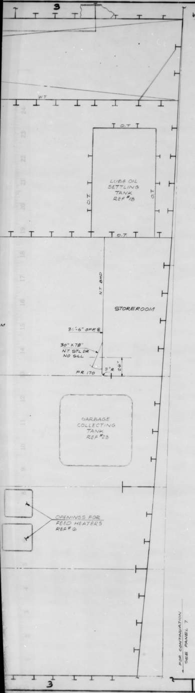
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 111-10-14

FRAME 6 OF 6


14
13
℄ SHIP
W.T. BHD
141
142
144
146
148
150
152
153
154
156
INSULATION P/S
REF. 19
TRANSV. STIFF ABV.
W.T. BHD.
REF. 5
PORTABLE STRUCTURE IN FWD. POSITION FOR 40'-0" CONTAINERS
REF. 18
HATCH OPN'G IN MN. DK. ABV.
E.J. -20" AFT FR. 141 P/S
A.O. P/S
L.H. P/S
V.L.
NT. FLAT P/S
A.O. P/S (ABV)
½" OF FLAT INTO HOLD
REF. 7
LONG'L BHD. P/S
REF. 7
15"x30"
A.O.
SWASH BHD
REF. 5
SHELL
NT. FLAT P/S
REF. 22
O.T. BHD. P/S
REF. 5
HOLD NO. 8
CONTAINER
8-X-8-3 (P)
8-X-7-3 (S)
CONTAINER
8-X-6-3 (P)
8-X 5-3 (S)
CONTAINER
8-X-4-3 (P)
8-X-3-3 (S)
CONTAINER
8-X-2-3 (P)
8-X-1-3 (S)
CONTAINER
8-F-1-3 (S)
8-F-2-3 (P)
CONTAINER
8-F-3-3 (S)
8-F-4-3 (P)
CONTAINER
8-F-5-3 (S)
8-F-6-3 (P)
CONTAINER
8-F-7-3 (S)
8-F-8-3 (P)
PORTABLE STRUCTURE IN AFT POSITION FOR 20'-0" CONTAINERS
REF. 13
BOX COLUMN
REF. 5
BOXED GIRDER @ MN DK. ABV. REF. 10
INSULATION
REF. 24
CONTAINER
8-A-1-3 (S)
8-A-2-3 (P)
CONTAINER
8-A-3-3 (S)
8-A-4-3 (P)
CONTAINER
8-A-5-3 (S)
8-A-6-3 (P)
CONTAINER
8-A-7-3 (S)
8-A-8-3 (P)
SWASH BHD ABV. P/S
O.T. BHD BEL. P/S
18" AFT. FR. 153 P
O.T. FLAT P/S
REF. 22
E.J.
OUTLINE OF SHELL @ 31'-4" FLAT ABV.
O.T. & W.T. BHD.
REF. 23
UP
DN.
NO. 15 F.O. WING TANK P/S
NO. 16 SERVICE F.O. WING TANK P/S

PLAN VIEW 14-A
FRAMES 141-157


3
W.T.
O.T.
LUBE OIL SETTLING TANK REF #18
N.T. BHD
STOREROOM
36'-6" OFF ℄
30" X 78" N.T. STL DR NO SILL
FR 170
3"R
24"
GARBAGE COLLECTING TANK REF #23
OPENINGS FOR FEED HEATERS REF #G
FOR CONTINUATION SEE PANEL 7
36" FR SPACING FR 157-181
2

GENERAL NOTES

1 ALL DIMENSIONS ARE THE SAME P/S UNLESS OTHERWISE NOTED.
2 ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3 SIZES OF ALL HATCHES, MANHOLES, DOORS, ARE CLEAR OPENINGS.
4 FOR CUTTING OF ALL ACCESS OPENINGS IN DKS, BHDS, GRDS, EXACT LOCATIONS WILL BE TAKEN FROM THE STRUCTURAL PLANS

5 ALL VERTICAL LADDERS & LADDER RUNGS WILL BE MINIMUM 16" WIDE. INSIDE OF STRINGERS & RETURNS RESPECTIVELY UNLESS OTHERWISE NOTED.

RESERVATIONS

ABBREVIATIONS

ABL	ABOVE BASELINE	MACHY	MACHINERY
A.O.	ACCESS OPENING	M.H.	MAN HOLE
ABV	ABOVE	N.T.	NON TIGHT
		OPNG	OPENING
		P/S	PORT & STARBOARD
BHD	BULKHEAD	POT	POTABLE
		PLATF	PLATFORM
COAM	COAMING		
C.D.	COFFERDAM	RES	RESERVATION
℄	CENTERLINE		
C.O.	CARGO OIL	STAN	STANCHION
		V.L.	VERTICAL LADDER
DK	DECK		
DN	DOWN		
DR	DOOR		
EXP.M.DR	EXPANDED METAL DR	W.T. M.H. B.P.	WATER TIGHT MANHOLE BOLTED PLATE
EXP.M.BHD	EXPANDED METAL BHD		
FR	FRAME	W.T.	WATER TIGHT
FWD	FORWARD	W/	WITH
GDR	GIRDER		
I.L.	INCLINED LADDER	#	NUMBER
L.R.	LADDER RUNG		

36'-0" MACHINERY FLAT

REFERENCE PLANS

NO.	PLAN NO.	TITLE
	129-01-53	GARBAGE CHUTE & COLLECTING TANK
22	111-10-16	GEN ARRGT 3RD DK FR 195-213 & S.G. FLAT
21	142-00-01	HATCH & SCUTTLE LIST
20	129-01-15	TRANSV SECT, BHDS, FRS & STAN. FR 157-170
19	142-00-03	ARRGT OF HATCH COVERS & PORT PLATF HOLD #9
18	129-01-40	STRUCTURAL TANKS ENGINE RM
17	H4650-129-01-35	MISC BHDS BELOW MAIN DK FR 157 AFT
16	M4650-412-12	ARRGT. ENG. WORKSHOP, ELECT. WORKSHOP & STOREROOM
15	232-00-42	LASHING EYES, BATTENS & WALKWAY A/D HOLD NO. 9
14	232-00-25	ARRGT. STORERMS 36'-0" & 38'-0" LEVEL
13	232-00-01	VERTICAL LADDERS ABV. INNERBOTTOM
12	232-00-02	INCLINED LADDERS BEL. MAIN DK. FR. 157-AFT
11	231-00-04	GUARD RAIL AROUND HATCHES AFT FR. 157
10	177-00-01	EXP. METAL BHDS & DETAILS
9	144-00-02	MANHOLE LIST - AFT FR. 157
8	129-06-13	ARRGT. OF DK CONTAINER GUIDES HOLD #9
7	129-06-32	CONTAINER STOOLS - HOLD NO. 9
6	129-02-12	FLATS BELOW 2ND DK. FR. 157-181
5	129-01-17	TRANSV. SECT. BHDS - FR. 185-195
4	129-01-16	TRANSV SECT. BHDS - FR. 171-184
3	129-01-13	TRANSV. SECT. BHDS - FR. 157-170
2	111-10-21	GEN. ARRGT. 2ND DECK - FR. 153½ - 203
1	H4650-111-10-11	GEN. ARRGT. 26'-0" AUX. MACHY FLAT & 20'-0" FLAT

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-26-77	5. 6,7,8	1- REVISED EXTENT OF LONG'L EXPANDED METAL BHD. 27'-0" OFF C.L. FR. 173 TO 181. 2- DISTILLED WATER TANK BHDS. LABELED W.T. ABV. ALTS TO SUIT G. G. SHARP APPVL. LTR DATED MAY 27, 1977	C.D.S.	JLM JN 7/29
2	7-24-80	8	1. WALKWAY - PORTSIDE - REVISED	CDS	JLM

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" : 1'-0" DATE 29 APRIL 1977
DRAWN C/B - S/T IN CHARGE
CHECKED ✓ EXAMINED
REVIEWED ✓ APPROVED Jackson

PLAN NO. H4650-111-10-15 ALT. NO. 2

GENERAL
ARRANGEMENT
36'-0" MACH'Y FLAT &
3RD DK. AFT (33'-0" ABV. BL) FR 181-195

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-27-77				
A.B.S.					
U.S.C.G.	6-21-77				
LLOYD'S R.S.					
U.S.P.H.S.	5-9-77				

		DATE OF ISSUE			
	ALTERATION	—	—	1	2
	ENGINEERING DISTRIBUTION	4-27-77	4-27-77	7-29-77	7-28-80
MAIL	OWNERS	4		2	4
MAIL	AMERICAN BUREAU	3		3	
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U.S. NAVY				
MAIL	U.S.C.G.	3		3	
MAIL	JOINER CONT'R.				
MAIL	USPH	3		3	
INSPECTION	OWNER'S INSP.	1		1	
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.			1	
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CDSCHAUB			1	
OFFICE	HULL DRAFT. - 21		1/8	1	1
OFFICE	MACH. DRAFT. - 22		1/8	2	
OFFICE	ELEC. DRAFT. - 23		1/8	1	
OFFICE	OUTFIT. DRAFT. - 25				
OFFICE	ESTIMATING				
OFFICE	STD-21-1 Engrs.		7/1		
MISC.	PRODUCTION (BCO)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	[illegible]	[illegible]	21	5
	YARD DISTRIBUTION		4-27-77	8-1-77	
YARD	[redacted] YARD OFFICE			1	
YARD	GEO. EASTBURG			1	
YARD	PIECE RATE - 11			1	
YARD	TEST DEPARTMENT				
YARD	QUALITY ASSURANCE			1	
YARD	[redacted] PLANNING		3/3	4	
STRUCTURAL	GROUND ASSEMBLY			4	
STRUCTURAL	35 DEPT.			2	
STRUCTURAL	P. McNAIR			1	
STRUCTURAL	H. LEVY			1	
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.			2	
STRUCTURAL	OPTICAL DETAIL-45			2	
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			2	
MACH'Y & OUTFIT.	BOILER SHOP - 56			1	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			2	
MACH'Y & OUTFIT.	Q-MAT'C			1	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 51				
MACH'Y & OUTFIT.	PAINT SHOP - 78			1	
OTHER	WELDING				
OTHER					
OTHER	MOLD LOFT - 41			1	
OTHER	BRACKET SHOP				
OTHER					
OTHER					
	TOTAL YARD DIST.		4	32	

H-15

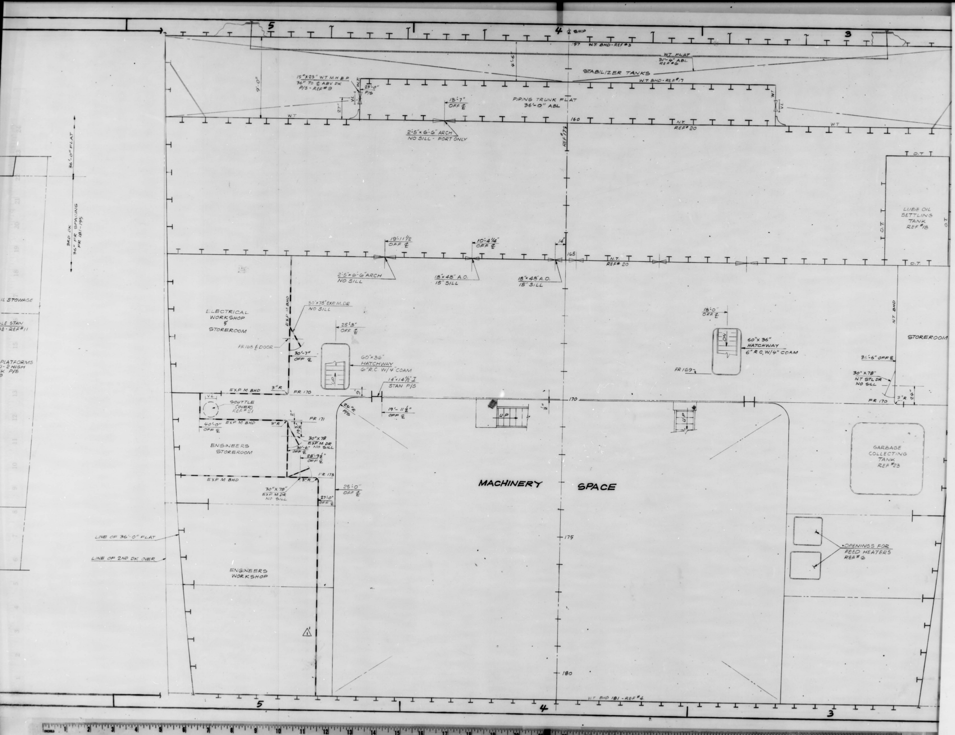
22.5 SQ. FT

SCHED SUB 3-21-7

BUILDERS PLAN NO. H-4650-111-10-15

FRAME 1 OF 4

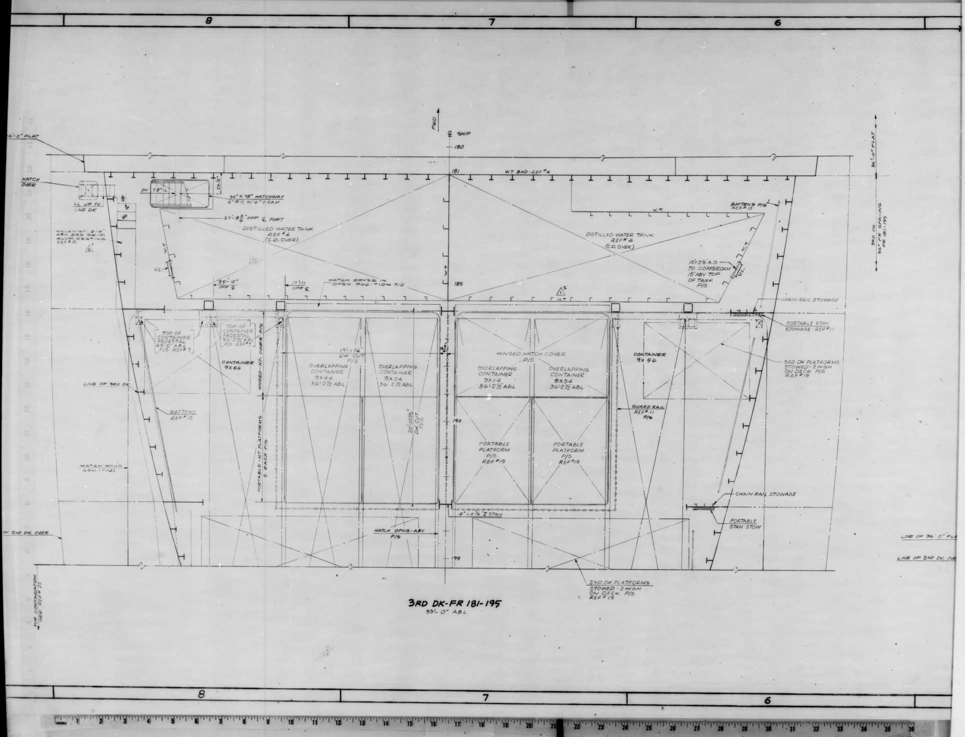
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


5
4 ℄ SHIP
3
157 W.T. BHD-REF#3
W.T. FLAT 31'-4" ABL REF#6
STABILIZER TANKS
15"X23" W.T. M.H. B.P. 36" TO ℄ ABV DK P/S - REF#9
23'-0" P/S
W.T. BHD-REF#17
PIPING TRUNK FLAT 36'-0" ABL
13'-7" OFF ℄
2'-5"x6'-6" ARCH NO SILL - PORT ONLY
160
N.T. REF#20
W.T.
9'-0"
4'-6"
27"
REF#17
36'-0" FLAT
3RD DK. 36" FR SPACING FR 181-195
LUBE OIL SETTLING TANK REF#18
O.T.
19'-11 1/2" OFF ℄
10'-4 1/4" OFF ℄
14"
165
N.T. REF#20
2'-5"x6'-6" ARCH NO SILL
18"x48" A.O. 15" SILL
18"x48" A.O. 15" SILL
IL STOWAGE
LE STAN E-2 REF#11
PLATFORMS 0-2 HIGH K P/S
ELECTRICAL WORKSHOP & STOREROOM
EXP. M. BHD
30"x78" EXP. M. DR NO SILL
25'-3" OFF ℄
FR 168 ℄ DOOR
30'-7" OFF ℄
60"x36" HATCHWAY 6" R.C. W/4" COAM
18'-0" OFF ℄
60"x36" HATCHWAY 6" R.C. W/4" COAM
FR 169
N.T. BHD
STOREROOM
36'-6" OFF ℄
30"x78" N.T. STL DR NO SILL
FR 170
3"R
24"
EXP. M. BHD
3"R
FR 170
14"x14 1/2" I STAN P/S
24"R P/S
19'-11 1/2" OFF ℄
170
UP
UP
SCUTTLE (COVER) REF#21
V.L.
40'-0" OFF ℄
EXP. M. BHD
FR 171
30"x78 EXP. M. DR NO SILL
30'-6" OFF ℄
28'-9 1/2" OFF ℄
ENGINEERS STOREROOM
EXP. M. BHD
FR 173
30"x78" EXP. M. DR NO SILL
25'-0" OFF ℄
27'-0" OFF ℄
MACHINERY SPACE
GARBAGE COLLECTING TANK REF#23
OPENINGS FOR FEED HEATERS REF#6
LINE OF 36'-0" FLAT
LINE OF 2ND DK OVER
175
ENGINEERS WORKSHOP
1
180
W.T. BHD 181 - REF#4
5
4
3

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-15

FRAME 2 OF 4



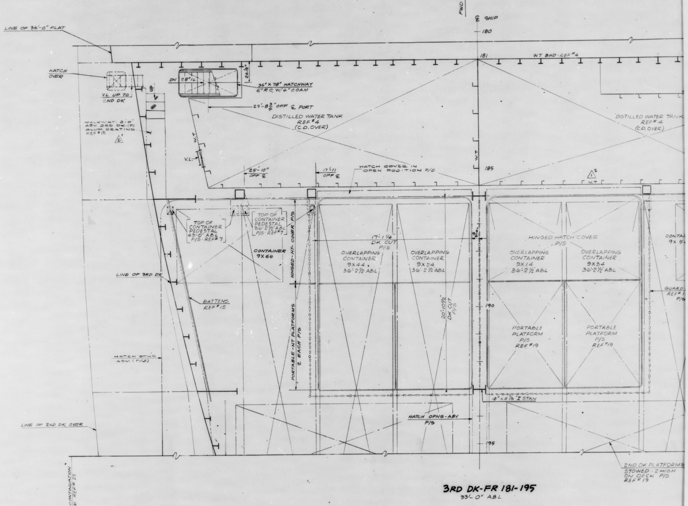
8
7
6
FWD
℄ SHIP
180
181
185
190
195
W.T. BHD - REF #4
36'-0" FLAT
HATCH OVER
VL UP TO 2ND DK
DN 28° I.L.
UP
26½"
35" X 78" HATCHWAY 6" R.C. W/4" COAM
29'-8¾" OFF ℄ PORT
WALKWAY 3'-0" ABV. 3RD DK (P) ALUM. GRATING REF #15
DISTILLED WATER TANK REF #4 (C.D. OVER)
DISTILLED WATER TANK REF #4 (C.D. OVER)
W.T.
V.L.
25'-10" OFF ℄
17'-11 OFF ℄
HATCH COVER IN OPEN POSITION P/S
BATTENS P/S REF #15
15"x23" A.O. TO COFFERDAM 15" ABV TOP OF TANK P/S
3RD DK 36" FR SPACING FR 181-195
CHAIN RAIL STOWAGE
PORTABLE STAN STOWAGE - REF #11
TOP OF CONTAINER PEDESTAL 43'-0" ABL P/S - REF #7
TOP OF CONTAINER PEDESTAL 36'-2½" ABL P/S - REF #7
HINGED-NT COVER P/S
CONTAINER 9X64
17'-1¼" DK CUT P/S
OVERLAPPING CONTAINER 9X44 36'-2½" ABL
OVERLAPPING CONTAINER 9X24 36'-2½" ABL
HINGED HATCH COVER P/S
OVERLAPPING CONTAINER 9X14 36'-2½" ABL
OVERLAPPING CONTAINER 9X34 36'-2½" ABL
CONTAINER 9X54
3RD DK PLATFORMS STOWED - 2 HIGH ON DECK P/S REF #19
LINE OF 3RD DK
BATTENS REF #15
PORTABLE-NT PLATFORMS 2 EACH P/S
20'-10½" DK CUT P/S
GUARD RAIL REF #11 P/S
PORTABLE PLATFORM P/S REF #19
PORTABLE PLATFORM P/S REF #19
HATCH OPNG ABV. (P/S)
CHAIN RAIL STOWAGE
PORTABLE STAN STOW
18" x 11⅛ I STAN
HATCH OPNG - ABV P/S
OF 2ND DK OVER
LINE OF 36'-0" FL
LINE OF 2ND DK OVE
2ND DK PLATFORMS STOWED - 2 HIGH ON DECK P/S REF #19
FOR CONTINUATION SEE REF #22

3RD DK-FR 181-195
33'-0" ABL

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-15

FRAME 3 OF 4


9
8
7
FWD
℄ SHIP
180
181
W.T. BHD-REF #4
LINE OF 36'-0" FLAT
HATCH OVER
VL UP TO 2ND DK
UP
DN 28" I.L.
26½"
36" X 78" HATCHWAY 6" R.C. W/4" COAM
29'-8¾" OFF ℄ PORT
DISTILLED WATER TANK REF #4 (C.D. OVER)
DISTILLED WATER TANK REF #4 (C.D. OVER)
WALKWAY 3'-0" ABV. 3RD DK. (P) ALUM. GRATING REF #15
2
W.T.
V.L.
W.T.
185
25'-10" OFF ℄
17'-11 OFF ℄
HATCH COVER IN OPEN POSITION P/S
1
W.T.
TOP OF CONTAINER PEDESTAL 43'-0" ABL P/S REF #7
TOP OF CONTAINER PEDESTAL 36'-2½" ABL P/S REF #7
CONTAINER 9X64
HINGED-NT COVER P/S
17'-1¼" DK CUT P/S
OVERLAPPING CONTAINER 9X44 36'-2½ ABL
OVERLAPPING CONTAINER 9X24 36'-2½ ABL
HINGED HATCH COVER P/S
OVERLAPPING CONTAINER 9X14 36'-2½ ABL
OVERLAPPING CONTAINER 9X34 36'-2½ ABL
CONTAI 9X 5
GUARD REF P/S
LINE OF 3RD DK
BATTENS REF #15
PORTABLE-NT PLATFORMS 2 EACH P/S
20'-10½" DK CUT P/S
190
PORTABLE PLATFORM P/S REF #19
PORTABLE PLATFORM P/S REF #19
HATCH OPNG ABV. (P/S)
18" X 11⅞" I STAN
HATCH OPNG-ABV P/S
LINE OF 2ND DK OVER
195
2ND DK PLATFORMS STOWED - 2 HIGH ON DECK P/S REF #19
FOR CONTINUATION SEE REF #22

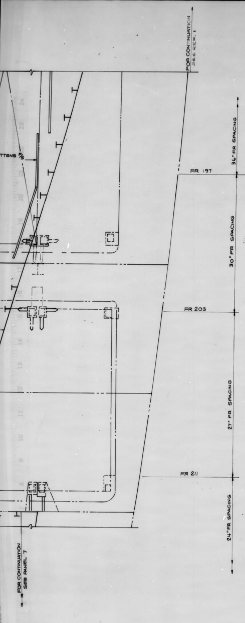
3RD DK-FR 181-195
33'-0" ABL

9 8 7

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-15

FRAME 4 OF 4



GENERAL NOTES:

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2. ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3. SIZES OF ALL HATCHES, MANHOLES & DOORS ARE CLEAR OPENINGS.
4. FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BHDS, GRDS, ETC. EXACT LOCATIONS WILL BE TAKEN FROM STRUCTURAL PLANS.
5. ALL VERTICAL LADDERS & LADDER RUNGS WILL BE A MINIMUM 16" WIDE INSIDE OF STRINGERS & RETURNS UNLESS OTHERWISE NOTED.

ABBREVIATIONS

ABL	ABOVE BASE LINE
ABV	ABOVE
ALUM	ALUMINUM
COAM	COAMING
DK	DECK
EM	EXPANDED METAL
FWD	FORWARD
P/S	PORT & STARBOARD
REF	REFERENCE
RWMHB	RAISED WATER TIGHT MANHOLE BOLTED PLATE
STAN	STANCHION
STGR	STRINGER
TRK	TRUNK
W.T.	WATERTIGHT
FR	FRAME
I.L.	INCLINED LADDER
#	NUMBER
℄	CENTER LINE
BHD	BULKHEAD
DN	DOWN

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-26-77	3,5	1-BHD. 213 OUTBD. OF 3RD DECK, INDICATED IN PHANTOM.	CDS	TJM JW 7/11
		7	2-BHD. 213 CHANGED FROM W.T. TO N.T.		
			ABV. ALTS TO SUIT G.G. SHARP APPVL. LTR. OF MAY 27, 1977		
2.		4	1-STANCHIONS 8'-4" OFF C.L. FRS. 202-203 TURNED 90°.		
		3,4	2-CONTAINER PEDESTALS FR. 200 P/S REVISED.		
		4	3-STANCHIONS AT FRS. 203 AND 212 ON C.L. ADDED.		
		7	4-COAMING AROUND STEERING GEAR REVISED.		
	7-24-80	7	5-STORES CRIBBING LOCATION DIMENSION CORRECTED.		
		5	6-WALKWAY-PORT SIDE-REVISED.	CDS	7/24/80 TJM

ALTERATION	DATE OF ISSUE			
ALTERATION	—	—	1	2
ENGINEERING DISTRIBUTION	4/29/77	4/29/77	7/29/77	7/25/80
MAIL OWNERS	4		2	4
AMERICAN BUREAU	3		3	
LLOYD'S R.S.				
U.S.M.A.				
U.S. NAVY				
U.S.C.G.	3		3	
JOINER CONT'R.				
USPH	3		3	
INSPECTION OWNER'S INSP.	1		1	
AM. BU. INSP.			1	
LLOYD'S INSP.				
U.S.M.A. INSP.			1	
U.S. NAVY INSP.				
U.S.C.G. INSP.			1	
CD SCHOOB			1	
OFFICE HULL DRAFT.-21		18	1	1
MACH. DRAFT.-22		18	2	
ELEC. DRAFT.-23		18	1	
OUTFIT. DRAFT.-25				
ESTIMATING				
21-1 ENGR.		18	1	
MISC. PRODUCTION (SCD)				
ORDER DEPT.				
JOINER CONT. YARD				
TOTAL ENG'R. DIST.	14	4	21	5
YARD DISTRIBUTION	/	4/29/77	8-1-77	
YARD YARD OFFICE			1	
GEO. EASTBURG			1	
PIECE RATE-11			1	
TEST DEPARTMENT				
QUALITY ASSURANCE			1	
PLANNING		11	7	
STRUCTURAL GROUND ASSEMBLY			4	
35 DEPT			2	
R. McNAIR			1	
H. LEVY			1	
NO. WAY				
NO. WAY				
NO. WAY				
NO. WAY				
STRUCT. SUPER.			2	
OPTICAL DETAIL-48			2	
WET DOCK				
MACH'Y & OUTFIT. PIPE SHOP-52				
OUTFIT. #1 PIER			1	
PIPE DRAFT.-52			2	
BOILER SHOP-56			1	
OUTSIDE MACH.-60			2	
Q-MATIC			1	
ELECTRIC SHOP-70				
SHEET MET. SHOP-74				
COPPER SHOP-51				
PAINT SHOP-78			1	
OTHER WELDING				
MOLD LOFT-41			1	
BRACKET SHOP				
TOTAL YARD DIST.	/	4	32	

4650-51-ALT 1

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 29 APRIL 1977
DRAWN C/B - S/T IN CHARGE
CHECKED EXAMINED
REVIEWED APPROVED

PLAN NO. H4650-111-10-16 ALT. NO. 2

GENERAL
ARRANGEMENT
3RD DK. AFT (33'-0" ABV. B.L) FR. 195-213
AND 38'-0" (STEERING GEAR) FLAT

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-27-77				
A.B.S.					
U.S.C.G.	6-21-77				
LLOYD'S R.S.					
U.S.P.H.S.	5-9-77				

NO.	PLAN NO.	TITLE
16	221-00-01	STEERING GEAR ROOM ARRANGEMENT
15	129-02-10	3RD DECK PLTG & GIRDERS FR. 181-218
14	129-03-20	SIDE STRINGERS FR. 157 AFT
13	129-01-35	MISC BHDS BELOW MN DK FR. 157 AFT
12	129-06-30	LAYOUT & DETAILS OF DOUBLER PLATES ON DECKS
11	129-06-32	CONTAINER STOOLS HOLD #9
10	232-00-42	LASHING EYES, BATTENS, & WALKWAY A/D HOLD NO.9
9	232-00-06	VERTICAL LADDERS ABV. INNERBOTTOM
8	232-00-02	INCLINED LADDERS BEL. MAIN DK. FR. 157 AFT
7	231-00-04	GUARD RAIL AROUND HATCHES-AFT FR. 157
6	144-00-02	MANHOLE LIST-AFT FR. 157
5	129-06-07	CONTAINER GUIDE ARRGT & DETS. AFT FR. 157
4	129-06-01	CONTAINER STOOLS-HOLD NO. 9
3	129-01-19	TRANSV. SECT. BHDS-FR. 212-AFT
2	129-01-18	TRANSV. SECT. BHDS-FR. 196-211
1	H4650-111-10-15	GEN. ARRGT. 36'-0" MACHY FLAT & 3RD DK AFT FR 181-195

REFERENCE PLANS

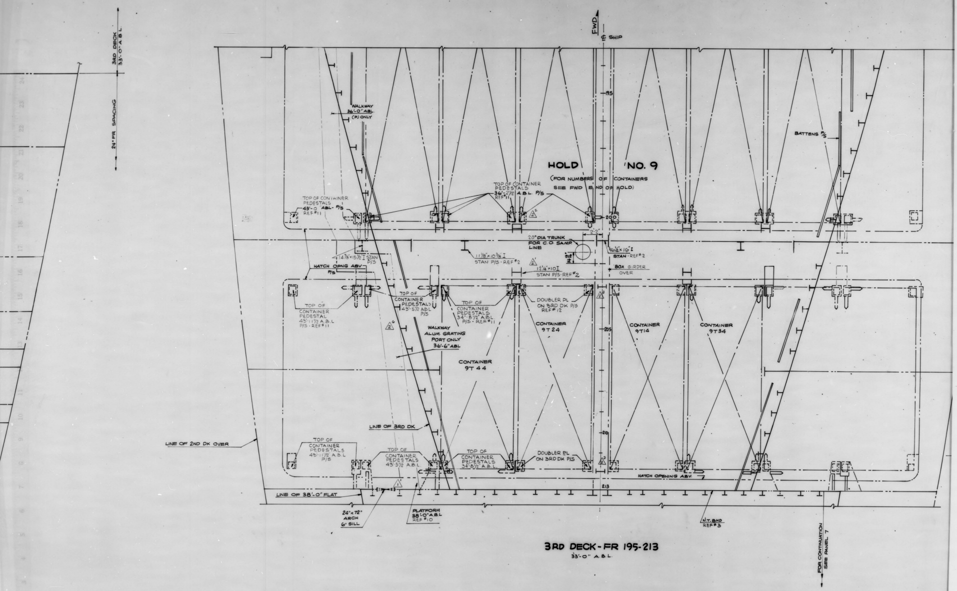
H-16 20.0 SQ.FT.

SUBJOINED 6-13-7

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-11-16

FRAME 1 OF 3


5
4
3
3RD DECK
33'-0" A.B.L.
24" FR SPACING
FWD
℄ SHIP
WALKWAY
36'-0" ABL
(P) ONLY
HOLD NO. 9
(FOR NUMBERS OF CONTAINERS
SEE FWD END OF HOLD)
BATTENS P/S
TOP OF CONTAINER
PEDESTALS
43'-0 ABL- P/S
REF#11
TOP OF CONTAINER
PEDESTALS
36'-2½ A.B.L. P/S
REF#11
195
200
205
210
213
2'-2"
20" DIA TRUNK
FOR C.O. SAMP
LINE
16¼"×16" I
STAN - REF#2
11⅛"×10⅜" I
STAN P/S - REF#2
14⅞"×15½" I STAN
P/S
HATCH OPNG ABV
P/S
12¼"×10 I
STAN P/S - REF#2
BOX GIRDER
OVER
TOP OF
CONTAINER
PEDESTAL
43'-11½ A.B.L
P/S - REF#11
TOP OF
CONTAINER
PEDESTALS
43'-5½ ABL
P/S
TOP OF
CONTAINER
PEDESTALS
34'-8½" ABL
P/S - REF#11
DOUBLER PL
ON 3RD DK P/S
REF#12
WALKWAY
ALUM. GRATING
PORT ONLY
36'-6" ABL
CONTAINER
9T 24
CONTAINER
9T14
CONTAINER
9T34
CONTAINER
9T 44
LINE OF 3RD DK
LINE OF 2ND DK OVER
TOP OF
CONTAINER
PEDESTALS
43'-11½" A.B.L
P/S
TOP OF
CONTAINER
PEDESTALS
43'-5½ A.B.L.
TOP OF
CONTAINER
PEDESTALS
34'-8½" A.B.L.
DOUBLER PL
ON 3RD DK P/S
HATCH OPENING ABV.
LINE OF 38'-0" FLAT
24"×72"
ARCH
6" SILL
PLATFORM
38'-0" A.B.L
REF#10
N.T. BHD
REF#3
FOR CONTINUATION
SEE PANEL 7

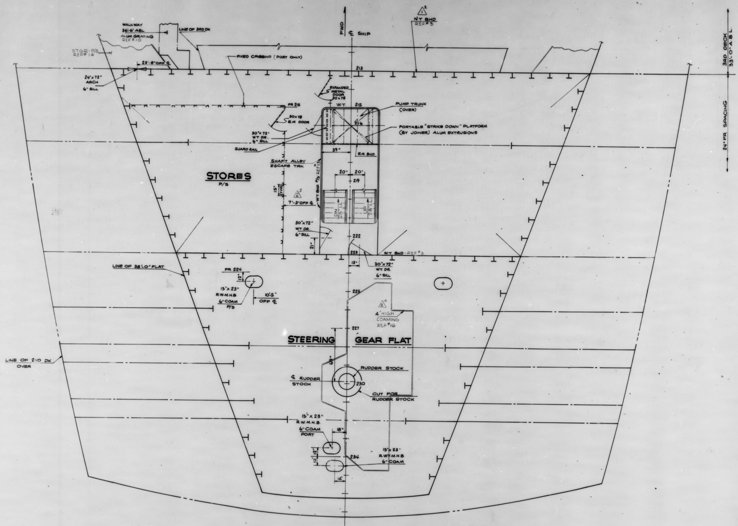
3RD DECK - FR 195-213

33'-0" A.B.L.

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-11-16

FRAME 2 OF 3



WALKWAY
36'-6" ABL
ALUM GRATING
REF#10
LINE OF 3RD DK
STGR-P/S
REF#14
23'-8" OFF ℄
24"x72"
ARCH
6" SILL
FIXED CRIBBING (PORT ONLY)
FWD
℄ SHIP
NT BHD
REF#3
213
EXPANDED
METAL
DOOR
30x78
FR 215
W.T.
215
30x78
E.M. DOOR
PUMP TRUNK
(OVER)
216
PORTABLE "STRIKE DOWN" PLATFORM
(BY JOINER) ALUM EXTRUSIONS
30"x72"
W.T. DR.
6" SILL
GUARD RAIL
39"
E.M. BHD
SHAFT ALLEY
ESCAPE TRK
W.T. BHD P/S REF#13
20"
20"
219
STORES
P/S
15" (TYP)
7'-3" OFF ℄
DN
28" I.L.
UP
28" I.L.
30"x72"
W.T. DR.
6" SILL
21"
222
223
W.T. BHD - REF#3
13"
30"x72"
W.T. DR.
6" SILL
LINE OF 38'-0" FLAT
FR 224
12"
15"x23"
R.W.M.H.B
6" COAM
P/S
10'-5"
OFF ℄
225
4" HIGH
COAMING
REF#16
227
STEERING
GEAR FLAT
6'8"
LINE OF 2ND DK
OVER
RUDDER STOCK
℄ RUDDER
STOCK
230
CUT FOR
RUDDER STOCK
15"x23"
R.W.M.H.B.
6" COAM
PORT
18"
12"
12"
234
15"x23"
R.W.T.M.H.B
6" COAM
14"
3RD DECK
33'-0" A.B.L.
24" FR SPACING

38'-0" FLAT
FR 213 AFT

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-11-16

FRAME 3 OF 3

3

2

ABBREVIATIONS

ABV - ABOVE
ABL - ABOVE BASELINE
A.O. · ACCESS OPENING
A.T. - AIR TIGHT
BHD - BULKHEAD
℄ · CENTERLINE
DK - DECK
DR - DOOR
DN - DOWN
E.J. - ERECTION JOINT
FR · FRAME
F.T. - FUMETIGHT
FWD - FORWARD
GT · GASTIGHT
GDR - GIRDER
G.R. · GRABRODS
I.L. · INCLINED LADDER
LONGL · LONGITUDINAL
MN - MAIN
M.T. · FLAME TIGHT
M.J. · METAL JOINER
N.T. · NON-TIGHT
O.T. · OIL TIGHT
P/S · PORT & STARBOARD
STAN - STANCHION
STBD - STARBOARD
V.L. · VERTICAL LADDER
W.T. · WATERTIGHT
R.W.M.H.B. - RAISED WATERTIGHT MANHOLE BOLTED PLATE
F.W.T.M.H.B. - FLUSH WATERTIGHT MANHOLE BOLTED PLATE
F.O.T.M.H.B. - FLUSH OIL TIGHT MANHOLE BOLTED PLATE
RE.O.T.M.H.B. - RECESSED OIL TIGHT MANHOLE BOLTED PLATE

ME
24" FR. SPAC.
W.T. BHD.
ABV & BEL
REF #18

GENERAL NOTES:-

1. SIZES OF ALL DOORS & HATCHES ARE CLEAR OPENING.
2. GIVEN SILLS & COAMING HEIGHTS ARE ABOVE FINISHED DECKS.
3. ALL DIMENSIONS ARE SAME P/S UNLESS OTHERWISE NOTED.
4. ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
5. FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BULKHEADS, GIRDERS, ETC., EXACT LOCATIONS WILL BE TAKEN FROM STRUCTURAL PLANS.
6. ALL VERTICAL LADDERS & LADDER RUNGS SHALL BE MINIMUM 16" WIDE INSIDE STRINGERS & RETURNS RESPECTIVELY UNLESS OTHERWISE NOTED.

REFERENCE PLANS

NO.	PLAN NO.	TITLE
30	232-00-09	INCLINED LADDERS IN CARGO HOLDS 1,2,3,4 & 8
29	129-01-48	TRANSV SECT, BHDS FRS 26-36
28	129-03-01	FOREPEAK FRAMING · LONG & FLATS
27	232-00-45	BOSUN'S STOREROOMS · MAIN & 2ND DKS
26	232-00-06	VERTICAL LADDERS ABV INNERBOTTOM
25	232-00-04	INCLINED LADDERS IN REFRIG HOLDS ETC
24	223-00-02	HAWSE PIPE, CHAIN PIPE & BOLSTERS
23	144-00-01	MANHOLE LIST · FWD. FR. 157
22	141-00-01	DOOR SCHEDULE
21	231-00-03	GUARD RAILS AROUND HATCHES · FWD. FR. 157
20	129-06-06	DETAILS - STOPS & REMOTE CONTROLS
19	129-06-02	ARRGT CONVERT. GUIDES HOLD # 2 3 4 & 8
18	129-03-02	FOREPEAK FRAMING FRS 10-16
17	129-02-21	MAIN DK. PLTG & GDRS, FR. 46-77
16	129-02-20	MAIN DK. PLTG. & GDRS. FWD FR 46
15	129-02-13	2ND DK PLTG & GDRS. FR. 77½ FWD.
14	129-01-39	STRUCTURAL TRUNKS · FWD. FR. 18
13	129-01-36	CARGO OIL TANKS FR. 157 · FWD.
12	129-01-33	MISC. BHDS BELOW MAIN DK FR. 77 · FWD.
11	129-01-29	LONGL BHDS. ON 2ND DK. FR. 77½ FWD
10	129-01-22	LONGL BHDS. BELOW 2ND DK. FR. 77½ FWD
9	129-01-06	TRANSV BHDS FR 69 & 77
8	129-01-05	TRANSV SECTS. BHDS. FR. 62-77
7	129-01-04	TRANSV. SECTS. BHDS. FR. 46-61 - SHT. 2
6	129-01-03	TRANSV. SECTS. BHDS. FR. 46-61 SHT. 1
5	129-01-02	TRANSV SECTS. BHDS. FR. 37-45
4	129-01-01	TRANSV. SECTS. BHDS. FRS. 17-25
3	111-10-24	GEN. ARRGT. MAIN DECK - FR. 45 - 77½
2	111-10-23	GEN. ARRGT. MAIN DECK - FR. 45 - FWD.
1	H4650-111-10-18	GEN. ARRGT. 2ND DECK · FR. 77½ - 109

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-27-77	12,15	1-BHDS. 61 AND 77 LABELED W.T. AND N.T. ABV. ALT. TO SUIT G.G. SHARP APPVL. LTR. DATED JUNE 13, 1977	C.D.S.	JBM 8/1/7
2.	7-24-80	8,9 14,16	1-MANHOLES FRS. 27½ & 35½ P/S RELOCATED. 2-FIRE STATIONS NOS. 36 & 37 INDICATED.	CDS	7/28/80 KM

HULL	DESIGN	CHARGE
4651	—	4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DRAWN C/B - S/T
CHECKED —
REVIEWED —
DATE 17 MAY 1977
IN CHARGE
EXAMINED
APPROVED

PLAN NO. H4650-111-10-17
ALT. NO. 2

GENERAL ARRANGEMENT 2ND DECK FRS. 77½ - FWD.

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-13-77				
A.B.S.					
U.S.C.G.	6-23-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE			
	ALTERATION	—	—	1	2
	ENGINEERING DISTRIBUTION	5-17-77	5-17-77	8-3-77	7-28-80
MAIL	OWNERS	4		2	4
	AMERICAN BUREAU	3		3	
	LLOYD'S R.S.				
	U.S.M.A.				
	U.S. NAVY				
	U.S.C.G.	3		3	
	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1		1	
	AM. BU. INSP.			1	
	LLOYD'S INSP.				
	U.S.M.A. INSP.			1	
	U.S. NAVY INSP.				
	U.S.C.G. INSP.			1	
	G.D. SCHAUB			1	
OFFICE	HULL DRAFT. - 21		12	1	1
	MACH. DRAFT. - 22		12	2	
	ELEC. DRAFT. - 23		12	1	
	OUTFIT. DRAFT. - 25				
	ESTIMATING				
	21-1 ENGR.		12	1	
MISC.	PRODUCTION (BCD)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	7	18	5
	YARD DISTRIBUTION	/	5-17-77	8-9-77	
YARD	[illegible] LAD-OFFICE			1	
	GEO. EASTBURG			1	
	PIECE RATE - 11			1	
	TEST DEPARTMENT				
	QUALITY ASSURED			1	
	[illegible] PLANNING		12	7	
STRUCTURAL	GROUND ASSEMBLY			4	
	35 DEPT.			2	
	H. LEVY			1	
	P. McNAIR			1	
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.			2	
	OPTICAL DETAIL - 45			2	
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52			1	
	OUTFIT. #1 PIER			1	
	PIPE DRAFT. - 52			2	
	BOILER SHOP - 58			1	
	OUTSIDE MACH. - 60			1	
	Q-MAT'L			1	
	ELECTRIC SHOP - 70				
	SHEET MET. SHOP - 74				
	COPPER SHOP - 51				
	PAINT SHOP - 75			1	
	WELDING				
OTHER	MOLD LOFT - 41			1	
	BRACKET SHOP				
	TOTAL YARD DIST.	/	4	32	

4650-51 - ALT 1

3

2

1.

H-17

42.5 SQ.FT.

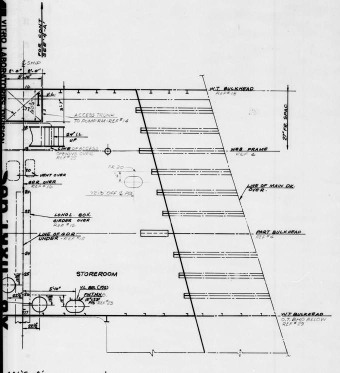
SCHED - SUBMIT 6-6-7

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

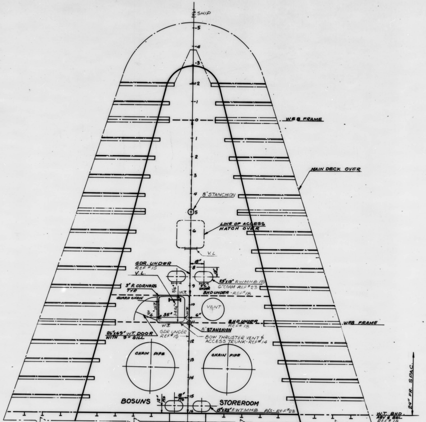
BUILDERS PLAN NO. H-4650- 110-10-17

FRAME 1 OF 7


FOR CONT SEE '4-A'
℄ SHIP
2'-0"
2'-0"
3'-10"
16
17
18
19
20
21
22
24
25
26
27
V.L.
3'-7"
13 5/8"
ACCESS TRUNK TO PUMP RM - REF # 14
24" I.L. UP
LINE OF ACCESS OPENING OVER REF # 25
VENT OVER
GDR OVER REF # 16
FR 20
72.5' OFF ℄ P/S
LONGL. BOX GIRDER OVER REF # 16
LINE OF GDR UNDER - REF # 15
W.T. BULKHEAD REF # 18
27" FR. SPAC.
WEB FRAME REF 4
LINE OF MAIN DK. OVER.
PART BULKHEAD REF # 4
STOREROOM
13½"
22½"
5'-10"
V.L. BEL (P/S)
F.W.T.M.H.B. 15"x23" P/S REF # 23
15"
13½"
W.T. BULKHEAD O.T. BHD BELOW REF # 29
22½"

LAN '6-A'
16 - 27

FOR CONT SEE '9-A'


℄ SHIP
5
4
3
2
1
0
1
2
3
4
5
6
8
9
10
11
12
13
14
15
16
WEB FRAME
MAIN DECK OVER
8" STANCHION
LINE OF ACCESS HATCH OVER
V.L
18"
GDR. UNDER REF # 15
V.L.
25"x15" RWMHB P/S 6" COAM REF # 23
V.L. UNDER
3" R. CORNERS TYP
3/4"
W.T.
BHD UNDER - REF # 18
GUARD CHAIN
VENT
35"
34 3/4"
6"
BHD UNDER REF # 18
WEB FRAME
W.T.
8" STANCHION
26"x69" W.T. DOOR WITH 9" SILL
GDR UNDER REF # 15
BOW THRUSTER VENT & ACCESS TRUNK - REF # 14
CHAIN PIPE
CHAIN PIPE
BOSUNS
STOREROOM
12" P/S
18" P/S
15"x23" FWTMHB P/S - REF # 23
W.T. BHD. ABV & BEL REF # 18
24" FR. SPAC.

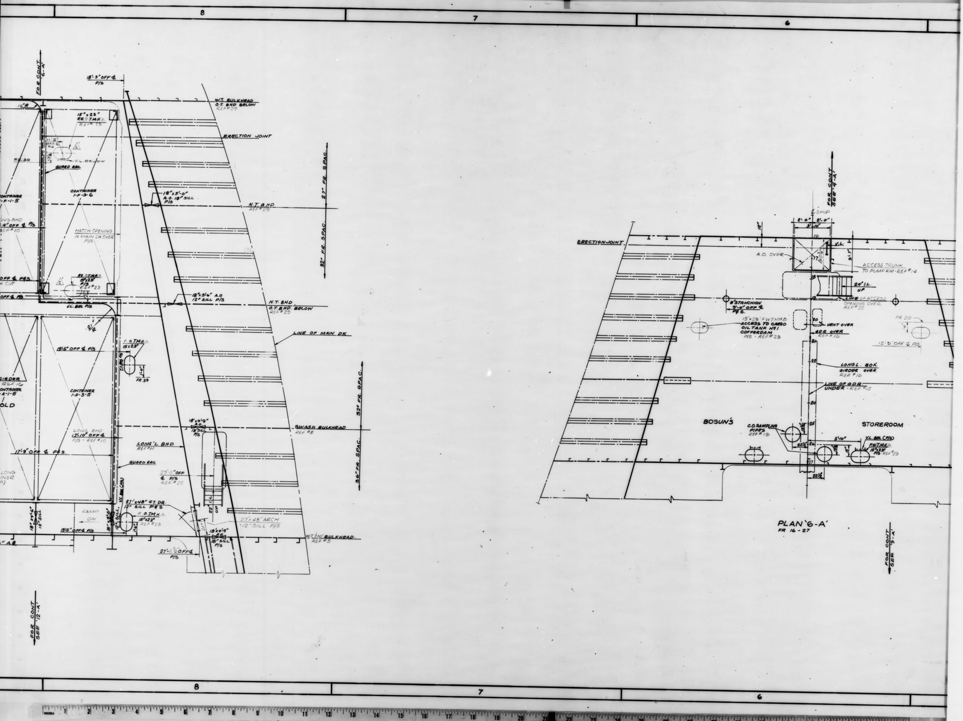
FOR CONT. SEE '7-A'

PLAN '4-A'
FR. 16 FWD

BUILDERS PLAN NO. H-4650-110-10-17

FRAME 2 OF 7

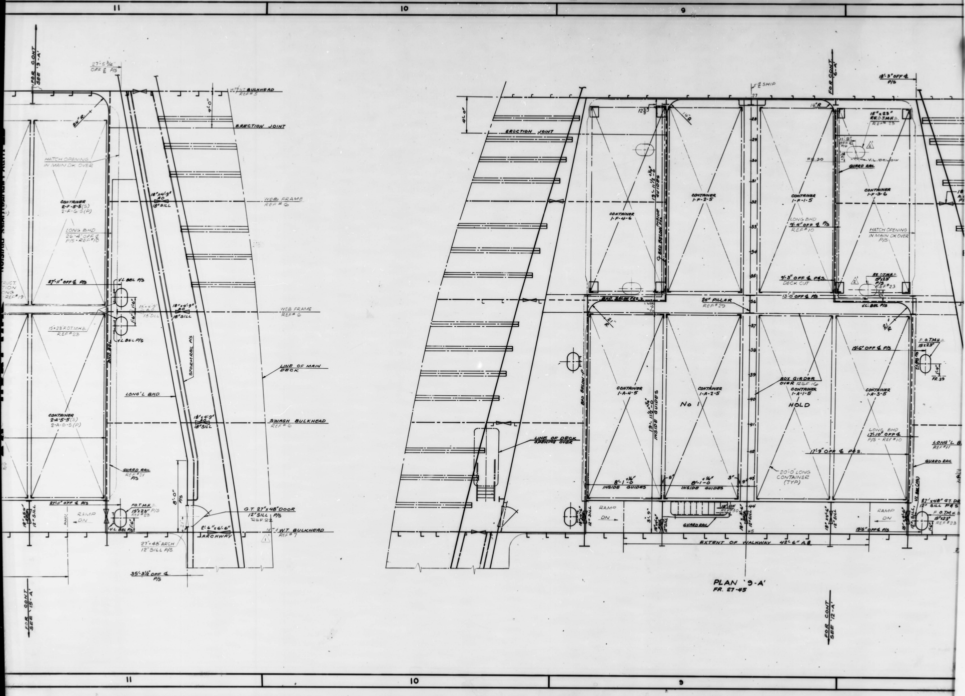
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


8
7
6
FOR CONT. '6-A'
18'-3" OFF ℄ P/S
14"R
W.T. BULKHEAD
O.T. BHD BELOW
REF# 29
15"x23" RE.O.T.M.H.B.
REF# 23
ERECTION JOINT
11'-3" OFF ℄ P/S
2
V.L. BELOW
FR.30
GUARD RAIL
CONTAINER 1-F-3-6
CONTAINER 1-F-1-5
18"x5'-0" A.O. 18" SILL P/S
N.T. BHD
REF# 29
27" FR. SPAC.
32" FR. SPAC.
LONG BHD
4" OFF ℄ P/S
REF# 10
HATCH OPENING IN MAIN DK OVER P/S
RE.O.T.M.H.B. 15"x23" P/S REF# 23
OFF ℄ P&S.
K CUT
OFF ℄ P/S
V.L. BEL P/S
18"x5'-6" A.O 12" SILL P/S
N.T. BHD.
O.T. BHD. BELOW
REF# 29
21" R
LINE OF MAIN DK
F.O.T.M.H.B. 15x23"
19'-5" OFF ℄ P/S
V.L. BEL P/S
1'-4"
FR.39
GIRDER
REF.16
CONTAINER 1-A-1-5
OLD
CONTAINER 1-A-3-5
LONG BHD
17'-10" OFF ℄ P/S - REF# 10
17'-9" OFF ℄ P&S.
LONG'L BHD
REF# 11
18"x4'-9" A.O. 18" SILL P/S
SWASH BULKHEAD
REF# 5
32" FR. SPAC.
36" FR. SPAC.
GUARD RAIL
29'-0" OFF ℄ P/S
REF# 25
LONG
INER
P)
27"x48" G.T. DR. 12" SILL P&S
F.O.T.M.H.B. 15"x23" REF# 23
RAMP DN
18"x4'-6" 12" SILL
18"x4'-6" 12" SILL, V.L. BEL (P/S)
1'-6"
22" I.L. UP
27"x48" ARCH 12" SILL P/S
21"
18"x4'-9" A.O. 18" SILL P/S
W.T. & NT BULKHEAD.
REF# 5
19'-5" OFF ℄ P/S
" AB
27'-5 3/4" OFF ℄ P/S
FOR CONT. SEE '12-A'
FOR CONT. SEE '4-A'
℄ SHIP
2'-0"
2'-0"
3'-10"
12"
ERECTION JOINT
16
V.L.
A.O. OVER
17
30 3/4"
3'-7"
ACCESS TRUNK TO PUMP RM - REF# 14
18
24" I.L. UP
19
LINE OF ACCESS OPENING OVER REF# 25
8" STANCHION 9'-4" OFF ℄ P&S.
15"x23" F.W.T.M.H.B. ACCESS TO CARGO OIL TANK No 1 COFFERDAM P/S - REF# 23
20
VENT OVER
GDR OVER REF# 16
FR 20
12'-3" OFF ℄ P/S
21
22
LONG'L BOX GIRDER OVER REF# 16
LINE OF GDR. UNDER - REF# 15
24
25
BOSUN'S
STOREROOM
C.O. SAMPLING PIPES REF# 13
26
22 1/2"
5'-10"
V.L. BEL (P/S)
F.W.T.M.H.B. 15"x23" P/S REF# 23
15"
27
22 1/2"
PLAN '6-A'
FR 16-27
FOR CONT. SEE '9-A'

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 110-10-17

FRAME 3 OF 7



11
10
9
FOR CONT SEE '9-A'
27'-5 3/4" OFF ℄ P/S
W.T. & N.T. BULKHEAD REF #5
ERECTION JOINT
4'-0"
HATCH OPENING IN MAIN DK OVER
CONTAINER 2-F-5-5(S) 2-F-6-5(P)
LONG BHD 26'-4" OFF ℄ P/S - REF #10
18"x4'-9" A.O. 18" SILL
WEB FRAME REF #6
27'-11" OFF ℄ P/S
V.L. BEL P/S
15"x23" F.O.T.M.H. REF #23
STORM RAIL P/S
LINE OF MAIN DECK
LONG'L BHD
CONTAINER 2-A-5-5(S) 2-A-6-5(P)
SWASH BULKHEAD REF #6
GUARD RAIL REF #21 P/S
F.O.T.M.H. 15"x23" P/S REF #23
RAMP DN
G.T. 27"x48" DOOR 12" SILL P/S REF 22
2'-6"x6'-6" ARCHWAY
N.T. & W.T. BULKHEAD REF #7
27"x48" ARCH 12" SILL P/S
35'-3 1/2" OFF ℄ P/S
FOR CONT SEE '15-A'
FOR CONT SEE '6-A'
18'-3" OFF ℄ P/S
℄ SHIP
27
28
29
30
31
32
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41
42
43
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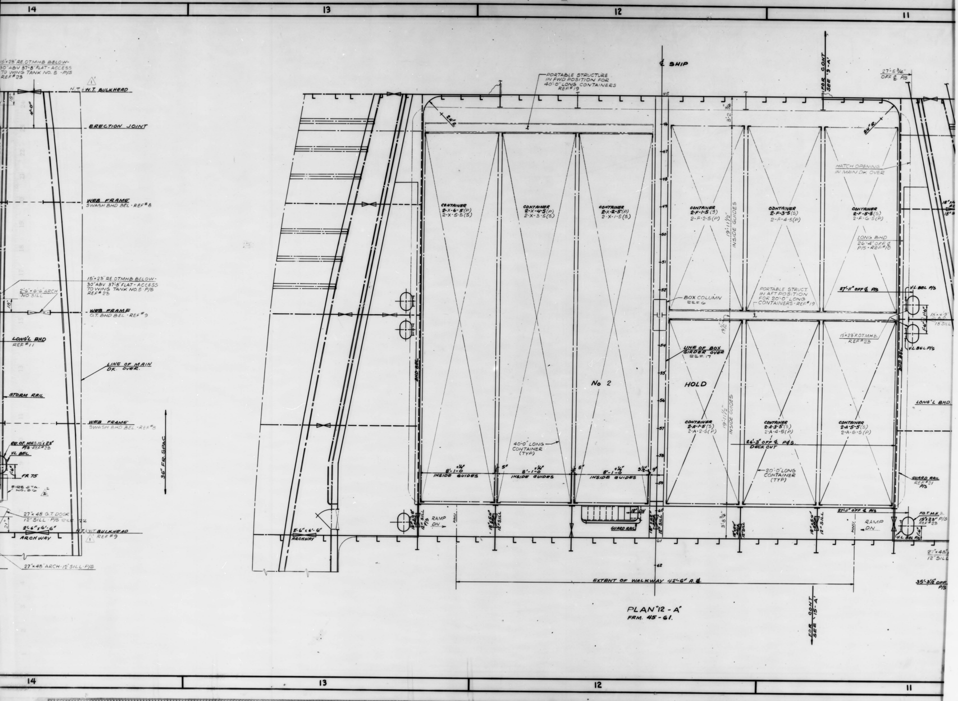
45
CONTAINER 1-F-4-6
CONTAINER 1-F-2-5
CONTAINER 1-F-1-5
CONTAINER 1-F-3-6
15"x23" RE.O.T.M.H. REF #23
GUARD RAIL
LONG BHD 9'-4" OFF ℄ P/S REF #10
HATCH OPENING IN MAIN DK OVER P/S
9'-3" OFF ℄ P&S DECK CUT
13'-0" OFF ℄ P/S
24" PILLAR REF #29
V.L. BEL P/S
LINE OF DECK OPENING OVER
CONTAINER 1-A-4-5
CONTAINER 1-A-2-5
No 1
BOX GIRDER OVER REF #16
CONTAINER 1-A-1-5
HOLD
CONTAINER 1-A-3-5
19'-6" OFF ℄ P/S
F.O.T.M.H. 15"x23"
19'-11 1/2"+1/16" INSIDE GUIDES
LONG BHD 17'-10" OFF ℄ P/S - REF #10
17'-9" OFF ℄ P&S
20'-0" LONG CONTAINER (TYP)
LONG'L B
GUARD RAIL
8'-1"+1/16"-0 INSIDE GUIDES
RAMP DN
GUARD RAIL
EXTENT OF WALKWAY 42'-6" A.B.
27"x48" G.T. DR 12" SILL P&S
F.O.T.M.H. 15"x23" REF #23
19'-5" OFF ℄ P/S
PLAN '9-A' FR. 27-45
FOR CONT SEE '12-A'

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 110-10-17

FRAME 4 OF 7


14
13
12
11
15"×23" RE.OTMHB BELOW-
30" ABV 37'-8" FLAT-ACCESS
TO WING TANK NO. 5 -P/S
REF#23
N.T. & W.T. BULKHEAD
ERECTION JOINT
WEB FRAME
SWASH BHD BEL-REF#8
15"×23" RE.OTMHB BELOW-
30" ABV 37'-8" FLAT-ACCESS
TO WING TANK NO.5-P/S
REF#23
2'-6"×6'-6" ARCH
NO SILL
WEB FRAME
O.T. BHD BEL-REF#9
LONG'L BHD
REF#11
LINE OF MAIN
DK. OVER.
STORM RAIL
WEB FRAME
SWASH BHD BEL.-REF#8
RE.OT.MHB 15"×23"
P/S REF#23
VL BEL
FR 75
FIRE STA.
NO. 36
27"×48 G.T. DOOR
12" SILL-P/S REF 22
2'-6"×6'-6"
ARCHWAY
N.T. & W.T. BULKHEAD
REF#9
27"×48" ARCH-12" SILL-P/S
36" FR. SPAC
2'-6"×6'-6"
ARCHWAY
℄ SHIP
PORTABLE STRUCTURE
IN FWD POSITION FOR
40'-0" LONG CONTAINERS
REF#19
24" R.
CONTAINER
2-X-6-5(P)
2-X-5-5(S)
CONTAINER
2-X-4-5(P)
2-X-3-5(S)
CONTAINER
2-X-2-5(P)
2-X-1-5(S)
BHD BEL
No 2
HOLD
40'-0" LONG
CONTAINER
(TYP)
8'-1-0 +1/4"
INSIDE GUIDES
8'-1-0 +1/4"
INSIDE GUIDES
8'-1-0 +1/4"
INSIDE GUIDES
5"
3 1/2"
9"
RAMP
DN
18" DN
GUARD RAIL
12" SILL
FOR CONT
SEE '9-A'
3'-2 3/4"
CONTAINER
2-F-1-5(S)
2-F-2-5(P)
CONTAINER
2-F-3-5(S)
2-F-4-5(P)
CONTAINER
2-F-5-5(S)
2-F-6-5(P)
19'-11 1/2"
INSIDE GUIDES
HATCH OPENING
IN MAIN DK OVER
LONG BHD
26'-4" OFF ℄
P/S-REF#10
PORTABLE STRUCT.
IN AFT POSITION
FOR 20'-0" LONG
CONTAINERS-REF#19
BOX COLUMN
REF 6
27'-11" OFF ℄ P/S
V.L. BEL P/S
1'-6"
18×4'-9"
A.C.
18" SILL
15×23" F.O.T.M.H.B.
REF#23
V.L. BEL P/S
13 1/2"
LINE OF BOX
GIRDER OVER
REF 17
BHD BEL
LONG'L BHD.
CONTAINER
2-A-1-5(S)
2-A-2-5(P)
CONTAINER
2-A-3-5(S)
2-A-4-5(P)
CONTAINER
2-A-5-5(S)
2-A-6-5(P)
19'-11 1/2"
INSIDE GUIDES
26'-3" OFF ℄ P&S
DECK CUT
20'-0" LONG
CONTAINER
(TYP)
GUARD RAIL
REF#21
P/S
27'-11" OFF ℄ P/S
F.O.T.M.H.B.
15"×23" P/S
REF#23
V.L. BEL P/S
RAMP
DN
3'-8 3/4"
18"×54" ARCH
12" SILL
27'-5 3/4"
OFF ℄ P/S
27"×48"
12" SILL
35'-3 1/2" OFF
P/S
EXTENT OF WALKWAY 42'-6" A.℄.
FOR CONT
SEE '15-A'
45
46
47
48
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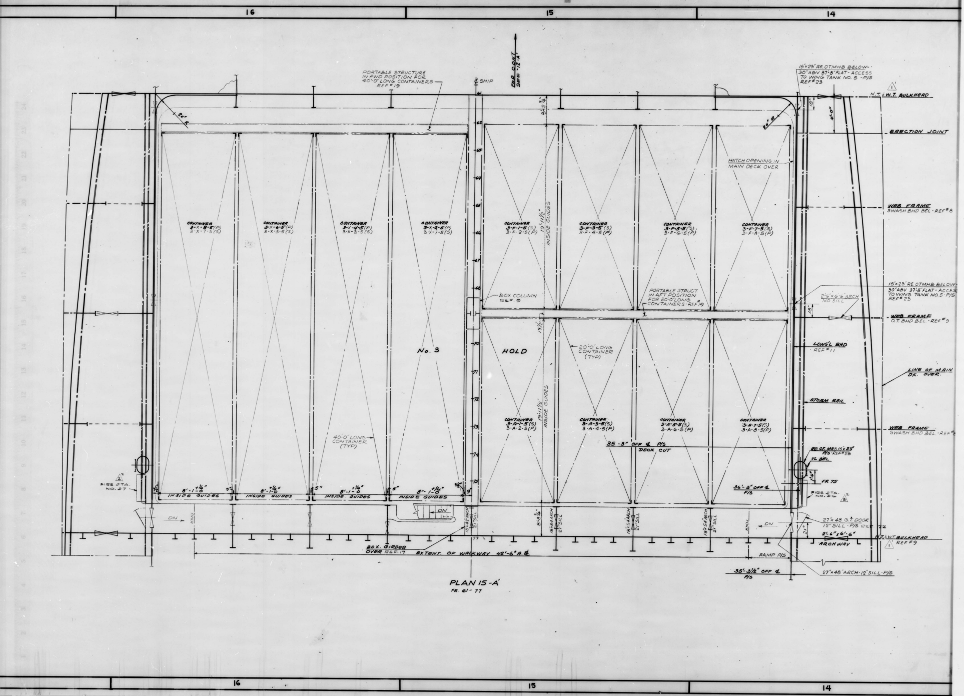
61
62

PLAN "12 - A"
FRM. 45-61.

BUILDERS PLAN NO. H-4650-110-10-17

FRAME 5 OF 7

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 2091


16
15
14
FOR CONT SEE '12-A'
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS REF # 19
℄ SHIP
15"x23" RE. OTMHB BELOW- 30" ABV 37'-8" FLAT - ACCESS TO WING TANK NO. 5 - P/S REF # 23
N.T. & W.T. BULKHEAD
ERECTION JOINT
24" R
HATCH OPENING IN MAIN DECK OVER
WEB FRAME
SWASH BHD BEL - REF # 8
CONTAINER 3-X-8-5(P) 3-X-7-5(S)
CONTAINER 3-X-6-5(P) 3-X-5-5(S)
CONTAINER 3-X-4-5(P) 3-X-3-5(S)
CONTAINER 3-X-2-5(P) 3-X-1-5(S)
CONTAINER 3-F-1-5(S) 3-F-2-5(P)
CONTAINER 3-F-3-5(S) 3-F-4-5(P)
CONTAINER 3-F-5-5(S) 3-F-6-5(P)
CONTAINER 3-F-7-5(S) 3-F-8-5(P)
19'-11½" INSIDE GUIDES
BOX COLUMN REF 9
PORTABLE STRUCT IN AFT POSITION FOR 20'-0" LONG CONTAINERS - REF # 19
15"x23" RE. OTMHB BELOW- 30" ABV 37'-8" FLAT - ACCESS TO WING TANK NO. 5 P/S REF # 23
2'-6" x 6'-6" ARCH NO SILL
18"
4'-0"
WEB FRAME
O.T. BHD BEL - REF # 9
No. 3
HOLD
20'-0" LONG CONTAINER (TYP)
13½"
LONG'L BHD REF # 11
LINE OF MAIN DK. OVER
STORM RAIL
CONTAINER 3-A-1-5(S) 3-A-2-5(P)
CONTAINER 3-A-3-5(S) 3-A-4-5(P)
CONTAINER 3-A-5-5(S) 3-A-6-5(P)
CONTAINER 3-A-7-5(S) 3-A-8-5(P)
WEB FRAME
SWASH BHD BEL. - REF # 8
40'-0" LONG CONTAINER (TYP)
35'-3" OFF ℄ P/S DECK CUT
RE. OT. MHB 15"x23" P/S - REF # 23
VL BEL
1'-6"
FR 75
FIRE STA. NO. 37
FIRE STA. NO. 36
36'-3" OFF ℄ P/S
8'-1-0 +¼" INSIDE GUIDES
8'-1-0 +¼" INSIDE GUIDES
8'-1-0 +¼" INSIDE GUIDES
8'-1-0 +¼" INSIDE GUIDES
7½"
5"
3½"
9"
DN
KNU
18"x42" ARCH 21" SILL
3'-8¾"
18"x54" ARCH 21" SILL
27"x 48 G.T. DOOR 12" SILL - P/S REF 22
21"
2'-6" x 6'-6" ARCHWAY
N.T. & W.T. BULKHEAD REF # 9
BOX. GIRDER OVER REF. 17
EXTENT OF WALKWAY 42'-6" A. ℄
RAMP P/S
35'-3½" OFF ℄ P/S
27"x48" ARCH - 12" SILL - P/S
61
62
63
64
65
66
67
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70
71
72
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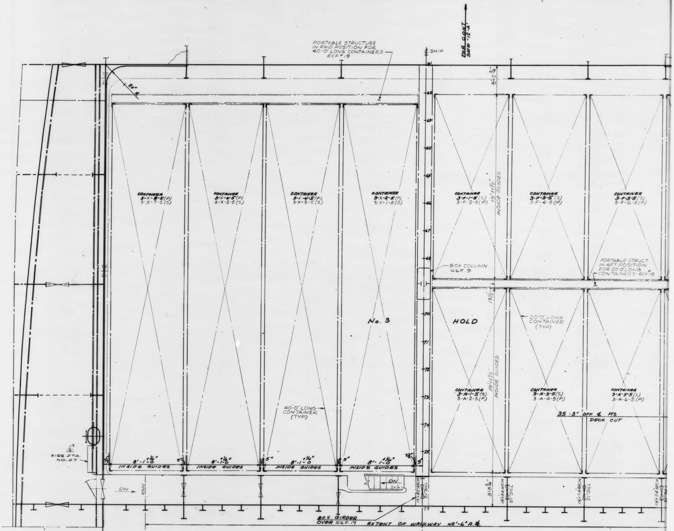
77

PLAN 15-A'
FR. 61 - 77

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 110-10-17

FRAME 6 OF 7


17
16
15
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" LONG CONTAINERS REF #19
℄ SHIP
FOR CONT SEE "12-A'"
24" R
3'-2 3/4"
61
62
63
64
65
66
67
68
70
71
72
73
74
75
77
CONTAINER 3-X-8-5(P) 3-X-7-5(S)
CONTAINER 3-X-6-5(P) 3-X-5-5(S)
CONTAINER 3-X-4-5(P) 3-X-3-5(S)
CONTAINER 3-X-2-5(P) 3-X-1-5(S)
CONTAINER 3-F-1-5(S) 3-F-2-5(P)
CONTAINER 3-F-3-5(S) 3-F-4-5(P)
CONTAINER 3-F-5-5(S) 3-F-6-5(P)
19'-11 1/2" INSIDE GUIDES
BOX COLUMN REF 9
PORTABLE STRUCT IN AFT POSITION FOR 20'-0" LONG CONTAINERS REF #19
13 1/2"
No. 3
HOLD
20'-0" LONG CONTAINER (TYP)
40'-0" LONG CONTAINER (TYP)
CONTAINER 3-A-1-5(S) 3-A-2-5(P)
CONTAINER 3-A-3-5(S) 3-A-4-5(P)
CONTAINER 3-A-5-5(S) 3-A-6-5(P)
35'-3" OFF ℄ P/S DECK CUT
FIRE STA. NO. 37
8'-1-0 +1/4" INSIDE GUIDES
5"
3 1/2"
9"
DN
KNU
18"x42" ARCH 21" SILL
18"x54" ARCH 21" SILL
3'-8 3/4"
BOX. GIRDER OVER REF. 17
EXTENT OF WALKWAY 42'-6" A.℄
17
16
15

PLAN 15-A'

FR. 61 - 77

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 2091C

Sep 1980 8X

BUILDERS PLAN NO. H-4650-110-10-17

FRAME 7 OF 7

3 2

FOR CONT.
SEE REF. 1

30"

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	7-27-77	5,8 4 8,7	1. BHDS. 77, 93 & 109 LABELED W.T. AND N.T. 2. MANHOLE LOCATION DIMENSIONS AND LABELS ADDED. 3. CARGO HOLD INSULATION REFERENCE ADDED. ABV. ALTS TO SUIT G.G SHARP LTR. DATED JUNE 13, 1977.	C.D.S.	JRM JW 8/24
2.	7-24-80	7,9 4,6,7,9	1. LADDER OPENINGS REVISED. 2. STORM RAIL IN 2ND DECK PASSAGEWAY RELOCATED FROM SHELL TO INBD. LONG'L BHD.	CDS	7/24/80 JRM

ABBREVIATIONS

ABV	ABOVE
ABL	ABOVE BASELINE
A.O.	ACCESS OPENING
A.P.	AFTER PERPENDICULAR
A.T.	AIRTIGHT
BHD	BULKHEAD
BKT	BRACKET
℄	CENTERLINE
COAM.	COAMING
D.F.	DRINKING FOUNTAIN
DIA.	DIAMETER
DK	DECK
DN	DOWN
ELEV	ELEVATOR
E.M.	EXPANDED METAL
F.D.	FIRE DOOR
F.P.	FORWARD PERPENDICULAR
F.R.	FRAME
F.S.	FIRE STATION
F.T.	FUMETIGHT
F.W.B.P.	FLUSH W.T. BOLTED PLATE
FWD	FORWARD
GT	GASTIGHT
GDR	GIRDER
H.W.M.H.	HINGED W.T. MANHOLE
INSUL	INSULATION
LONG'L	LONGITUDINAL
LKR	LOCKER
L.R.	LADDER RUNGS
MH	MANHOLE
MJD	METAL JOINER DOOR
M.L.	MOLDED LINE
N.T.	NONTIGHT
P/S	PORT & STARBOARD
RAD.	RADIUS
REFRIG.	REFRIGERATED
R.W.B.P.	RAISED W.T. BOLTED PLATE
STAN.	STANCHION
V.L.	VERTICAL LADDER
W.T.	WATER TIGHT
L.R.	LADDER RUNG

GENERAL NOTES

1. PORT SIDE SIMILAR & OPPOSITE TO STBD. SIDE, UNLESS OTHERWISE NOTED.
2. GIVEN SILLS & COAMING HEIGHTS ARE ABOVE FINISHED DK.
3. ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
4. FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BULKHEADS, GIRDERS, ETC. EXACT LOCATIONS WILL BE TAKEN FROM STRUCTURAL PLANS.
5. ALL VERTICAL LADDERS & LADDER RUNGS SHALL BE A MINIMUM 16" WIDE INSIDE STRINGERS & RETURNS RESPECTIVELY UNLESS OTHERWISE NOTED.

REFERENCE PLANS

NO.	PLAN NO.	TITLE
18	129-01-52	TRANSV SECT, BHD 109, SIDE FRS 110-114.39 (M39)
17	129-01-10	TRANSV SECT, BHDS, FRM & STAN FR 109-141
16	129-01-06	TRANSV BHDS FR 69 & 77
15	H4650-141-00-01	DOOR SCHEDULE
14	BSC-4650-1	ARRGT. REEFER CARGO SPACES
13	232-00-06	VERT. LADDERS ABV. INNERBOT. FR 153 FWD
12	232-00-04	INCL. LADDERS IN REFRIG. CARGO HOLDS
11	129-06-06	DETAILS - STOPS & REMOTE CONTROLS
10	129-06-02	ARRGT - CONVERT. GUIDES HOLDS #2,3,4 & 8
9	129-05-14	SHELL EXPANSION FR. 77-109
8	129-02-22	MAIN DK. PLTG. AND GIRDERS FR. 77-108
7	129-02-14	2ND DK. PLTG. AND GIRDERS FR 77-114.12 (M12)
6	129-01-34	MISC. BHDS. BELOW MN DK FR 77-157
5	129-01-23	LONG'L BHDS. ON TANKTOP FR. 77½ - 109
4	129-01-09	TRANSV. W.T. BHD 93 & TRANSV FRS 94-108 INCL
3	129-01-08	TRANSV. SECT. BHDS. FR. 78-93
2	111-10-19	GEN. ARRGT. 2ND DK. FR. 109-114.43
1	H4650-111-10-17	GEN. ARRGT. 2ND DK. FR. 77½ - FWD.

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 17 MAY 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-18
ALT. NO. 2²

GENERAL ARRANGEMENT 2ND DECK FRS. 77½ - 109

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-13-77				
A.B.S.					
U.S.C.G.	6-23-77				
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE			
	ALTERATION	-	-	1	2
	ENGINEERING DISTRIBUTION	5-17-77	5-17-77	9-8-77	7-28-80
MAIL	OWNERS	4		2	4
MAIL	AMERICAN BUREAU	3		3	
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U.S. NAVY				
MAIL	U.S.C.G.	3		3	
MAIL	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1		1	
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.			1	
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CDSchaub			1	
OFFICE	HULL DRAFT. - 21		12	1	1
OFFICE	MACH. DRAFT. - 22		12	2	
OFFICE	ELEC. DRAFT. - 23		12	1	
OFFICE	OUTFIT. DRAFT. - 25				
OFFICE	ESTIMATING				
OFFICE	21-1 Engr.		12	1	
MISC.	PRODUCTION (SCD)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	4	18	5
	YARD DISTRIBUTION		5-17-77	8-9-77	
YARD	WAO-OFFICE			1	
YARD	GEO. EASTBURG			1	
YARD	PIECE RATE - 11			1	
YARD	TEST DEPARTMENT				
YARD	QUALITY ASSURANCE			1	
YARD	PLANNING		7B	7	
STRUCTURAL	GROUND ASSEMBLY			4	
STRUCTURAL	35 DEPT			2	
STRUCTURAL	P. McNAIR			1	
STRUCTURAL	H. LEVY			1	
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.			2	
STRUCTURAL	OPTICAL DETAIL-40			2	
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52			1	
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			2	
MACH'Y & OUTFIT.	BOILER SHOP - 58			1	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			1	
MACH'Y & OUTFIT.	Q-MAT'L			1	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 81				
MACH'Y & OUTFIT.	PAINT SHOP - 75			1	
OTHER	WELDING				
OTHER	MOLD LOFT - 41			1	
OTHER	BRACKET SHOP				
	TOTAL YARD DIST.		14	32	

4650-51-ALT. 12

3 2 1

H-18

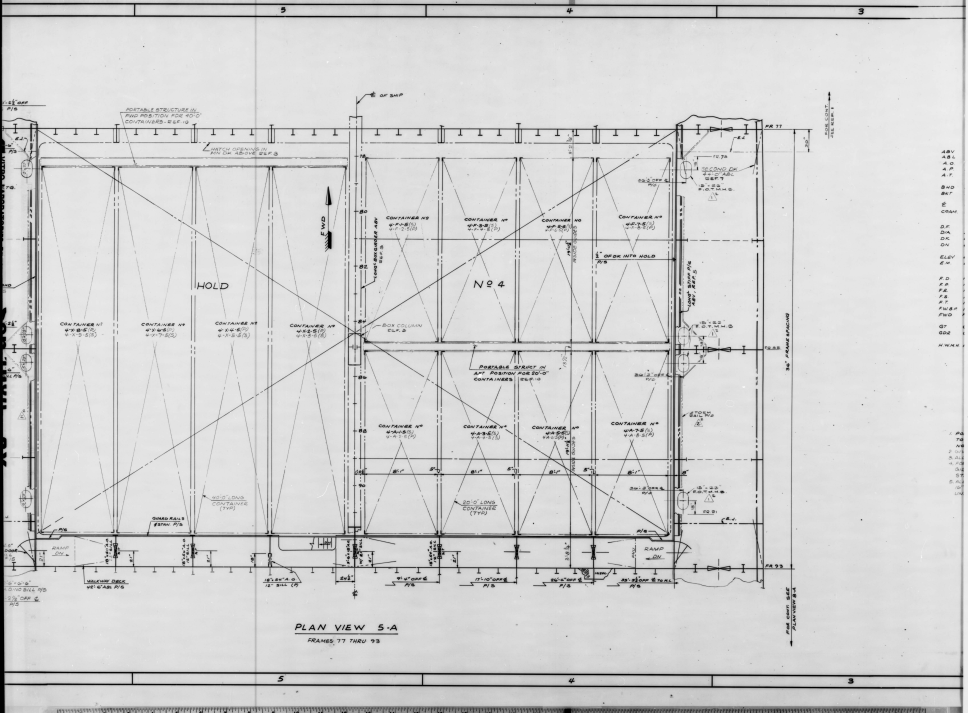
25.0 SQ.FT.

Sched Sub 2-14-7

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-18

FRAME 1 OF 4


5
4
3
℄ OF SHIP
PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0" CONTAINERS - REF. 10
HATCH OPENING IN MN DK ABOVE REF. 3
FR. 77
FOR CONT. SEE REF. 1
30"
E.J.
FR. 79
SECOND DK 44'-0" ABL REF. 7
15" x 23" F.O.T.M.H.B.
36'-3" OFF ℄ P/S
FWD
LONG'L BOX GIRDER ABV REF. 3
CONTAINER No 4-F-1-5(S) 4-F-2-5(P)
CONTAINER No 4-F-3-5(S) 4-F-4-5(P)
CONTAINER No 4-F-5-5(S) 4-F-6-5(P)
CONTAINER No 4-F-7-5(S) 4-F-8-5(P)
INSIDE GUIDES
3/4" OF DK INTO HOLD P/S
LONG'L STIFF P/S ABV. REF. 5
HOLD
No 4
CONTAINER No 4-X-8-5(P) 4-X-9-5(S)
CONTAINER No 4-X-6-5(P) 4-X-7-5(S)
CONTAINER No 4-X-4-5(P) 4-X-5-5(S)
CONTAINER No 4-X-2-5(P) 4-X-3-5(S)
BOX COLUMN REF. 3
FR. 85
36" FRAME SPACING
PORTABLE STRUCT IN AFT POSITION FOR 20'-0" CONTAINERS REF. 10
STORM RAIL P/S
CONTAINER No 4-A-1-5(S) 4-A-2-5(P)
CONTAINER No 4-A-3-5(S) 4-A-4-5(P)
CONTAINER No 4-A-5-5(S) 4-A-6-5(P)
CONTAINER No 4-A-7-5(S) 4-A-8-5(P)
8'-1"
5"
8"
40'-0" LONG CONTAINER (TYP)
20'-0" LONG CONTAINER (TYP)
GUARD RAILS & STAN. P/S
FR. 91
FR. 93
RAMP DN
WALKWAY DECK 42'-6" ABL P/S
18" x 54" A.O. 12" SILL (P)
9'-4" OFF ℄ P/S
17'-10" OFF ℄ P/S
26'-4" OFF ℄ P/S
35'-3 1/2" OFF ℄ TO M.L. P/S
INSUL.
FOR CONT. SEE PLAN VIEW 8-A
78
80
82
84
86
88
90

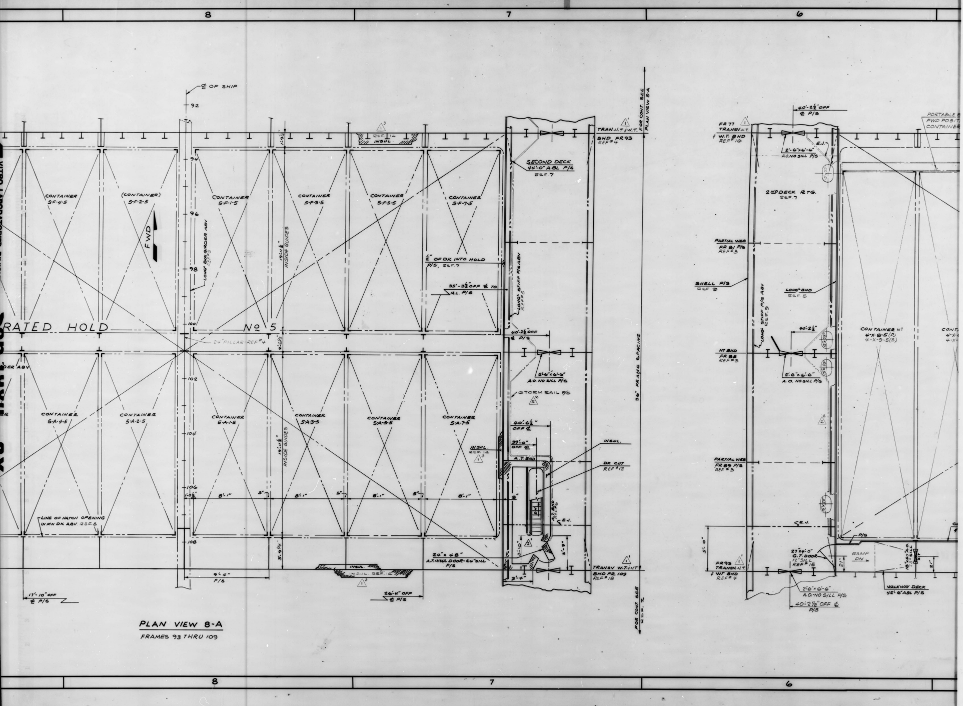
PLAN VIEW 5-A

FRAMES 77 THRU 93

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-18

FRAME 2 OF 4


8
7
6
℄ OF SHIP
92
94
96
98
100
102
104
106
108
CONTAINER 5-F-4-5
(CONTAINER) 5-F-2-5
CONTAINER 5-F-1-5
CONTAINER 5-F-3-5
CONTAINER 5-F-5-5
CONTAINER 5-F-7-5
FWD
LONG'L BOX GIRDER ABV REF#8
19'-11 1/8" INSIDE GUIDES
1'-9 1/8"
REF. 14 INSUL.
TRAN. N.T. & W.T. BHD FR93 REF#4
FOR CONT. SEE PLAN VIEW 5-A
SECOND DECK 44'-0" ABL P/S REF. 7
1/2" OF DK INTO HOLD P/S, REF. 7
35'-3 1/2" OFF ℄ TO M.L. P/S
LONG'L STIFF P/S ABV REF#5
RATED HOLD
Nº 5
24" PILLAR-REF#4
2'-6 1/2"
40'-2 1/2" OFF ℄ P/S
2'-6"×6'-6" A.O. NO SILL P/S
STORM RAIL P/S
36" FRAME SPACING
CONTAINER 5-A-4-5
CONTAINER 5-A-2-5
CONTAINER 5-A-1-5
CONTAINER 5-A-3-5
CONTAINER 5-A-5-5
CONTAINER 5-A-7-5
19'-11 1/8" INSIDE GUIDES
40'-6 1/2" OFF ℄
39'-0" OFF ℄
INSUL. REF. 14
INSUL.
A.T. BHD
DK CUT REF#12
A.T. BHD REF#6
E.J.
DN
1'-0 1/2"
8'-1"
5"
8"
LINE OF HATCH OPENING IN MN DK ABV. REF. 8
3'-9 1/4"
3'-10"
3'-9"
24"×48" A.T. INSUL DOOR-24" SILL P/S
INSUL.
INSUL. REF. 14
9'-4" P/S
3'-4"
TRANSV W.T. ENT BHD FR 109 REF#18
17'-10" OFF ℄ P/S
26'-4" OFF ℄ P/S
FOR CONT. SEE REF. 2
40'-2 1/2" OFF ℄ P/S
FR 77 TRANSV. N.T. & W.T. BHD REF#16
2'-6"×6'-6" A.O. NO SILL P/S
E.J.
PORTABLE S
FWD POSIT
CONTAINER
2ND DECK PLTG. REF. 7
PARTIAL WEB FR 81 P/S REF#3
SHELL P/S REF 9
LONG'L BHD REF. 5
LONG'L STIFF P/S ABV REF. 9
40'-2 1/2"
NT BHD FR 85 REF#3
15"×23"
2'-6"×6'-6" A.O. NO SILL P/S
CONTAINER Nº 4-X-8-5 (P) 4-X-9-5 (S)
CONT 4-X- 4-X-
PARTIAL WEB FR 89 P/S REF#3
E.J.
5'-0"
FR93 TRANSV. N.T. & WT BHD REF#4
27"×4'-0" G.T. DOOR 12" SILL REF#15
2'-6"×6'-6" A.O.-NO SILL P/S
40'-2 1/2" OFF ℄ P/S
P/S
RAMP DN
21"
18"×50" A.O. 23" SILL
WALKWAY DECK 42'-6" ABL P/S
G

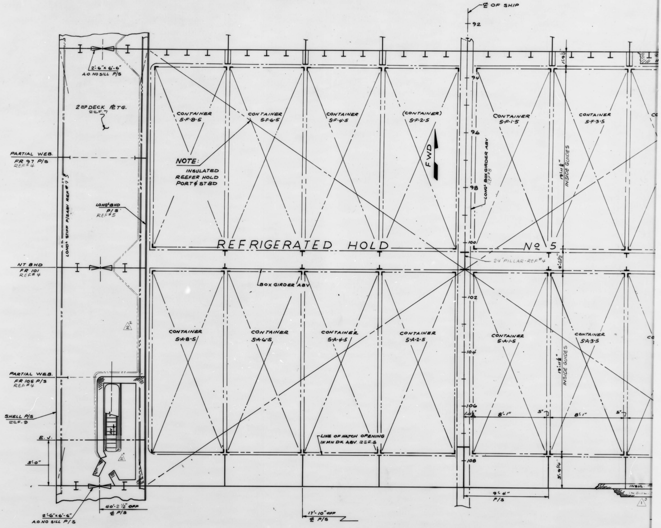
PLAN VIEW 8-A

FRAMES 93 THRU 109

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-18

FRAME 3 OF 4


℄ OF SHIP
92
94
96
98
100
102
104
106
108
2'-6" x 6'-6"
A.O. NO SILL P/S
2ND DECK PLTG.
REF. 7
PARTIAL WEB.
FR 97 P/S
REF # 4
LONG'L STIFF P/S ABV REF # 95
LONG'L BHD
P/S
REF # 5
NT BHD
FR 101
REF # 4
PARTIAL WEB.
FR 105 P/S
REF # 4
SHELL P/S
REF. 9
E.J.
5'-0"
2'-6" x 6'-6"
A.O. NO SILL P/S
40'-2 1/2" OFF
℄ P/S
17'-10" OFF
℄ P/S
CONTAINER
5-F-8-5
CONTAINER
5-F-6-5
CONTAINER
5-F-4-5
(CONTAINER)
5-F-2-5
CONTAINER
5-F-1-5
CONTAINER
5-F-3-5
NOTE:
INSULATED
REEFER HOLD
PORT & STBD
FWD
LONG'L BOX GIRDER ABV
REF # 5
19'-11 3/4"
INSIDE GUIDES
1'-9 1/2"
REFRIGERATED HOLD
No 5
24" PILLAR - REF # 4
2'-6 1/2"
BOX GIRDER ABV
CONTAINER
5-A-8-5
CONTAINER
5-A-6-5
CONTAINER
5-A-4-5
CONTAINER
5-A-2-5
CONTAINER
5-A-1-5
CONTAINER
5-A-3-5
19'-11 3/4"
INSIDE GUIDES
1'-0 1/2"
8'-1"
5"
8'-1"
5"
LINE OF HATCH OPENING
IN MN DK ABV. REF. 8
3'-9 1/4"
9'-4"
P/S
INSUL
INSUL

PLAN VIEW 8-A

FRAMES 93 THRU 109

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

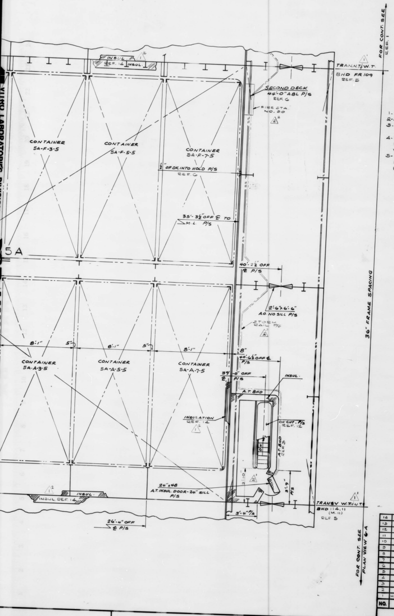
BUILDERS PLAN NO. H-4650-110-10-18

FRAME 4 OF 4

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-19

FRAME 1 OF 3


2
CONTAINER 5A-F-3-5
CONTAINER 5A-F-5-5
CONTAINER 5A-F-7-5
CONTAINER 5A-A-3-5
CONTAINER 5A-A-5-5
CONTAINER 5A-A-7-5
INSUL. REF. 14 INSUL.
TRAN.N.T. & W.T. BHD FR 109 REF. 5
SECOND DECK 44'-0" ABL P/S REF. 6
FIRE STA. NO. 30
1/2" OF DK INTO HOLD P/S REF. 6
35'-3 1/2" OFF ℄ TO M.L P/S
5A
40'-2 1/2" OFF ℄ P/S
2'-6"x6'-6" A.O. NO SILL P/S
STORM RAIL P/S
8'-1"
5"
8"
40'-6 1/2" OFF ℄ P/S
39'-0" OFF ℄ P/S
INSUL.
A.T. BHD
DK CUT P/S REF. 12
A.T. BHD REF. 3
INSULATION REF. 14
3'-10"
3'-9" P/S
24"x48 A.T. INSUL DOOR-24" SILL P/S
INSUL. DEF. 14
TRANSV W.T. & N.T. BHD 114.11 (M.11) REF 5
3'-4" P/S
26'-4" OFF ℄ P/S
36" FRAME SPACING
FOR CONT. SEE REF. 1
FOR CONT. SEE PLAN VIEW 6-A
2

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-27-77	5, 3 3,5	1-BHDS 109, 114.11(M.11) & 114.27(M.27) LABELED W.T. & N.T. 2-CARGO HOLD INSULATION REFERENCE ADDED. ABV. ALTS. TO SUIT G.G SHARP APPROVAL LTR. DATED JUNE 13, 1977	C.D.S.	JLM
2.	7-24-80	2,4 5,7 2,4 2,4, 5,7	1. LADDER OPENINGS REVISED. 2-FIRE STATIONS 30 & 31 INDICATED. 3- STORM RAIL IN 2ND DECK PASSAGEWAY RELOCATED FROM SHELL TO INBD. LONG'L BHD.	CDS	7/28/80 JLM

·GENERAL NOTES·

1- ALL DIMENSIONS ARE SAME P/S UNLESS OTHERWISE NOTED.
2- ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3- SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC. ARE CLEAR OPENING.
4- FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BULKHEADS, GIRDERS, ETC. EXACT LOCATIONS WILL BE TAKEN FROM STRUCTURAL PLANS.
5- ALL VERTICAL LADDERS & LADDER RUNGS SHALL BE MINIMUM 16" WIDE INSIDE STRINGERS & RETURNS RESPECTIVELY, UNLESS OTHERWISE NOTED.

·ABBREVIATIONS·

ABV	ABOVE
A.O.	ACCESS OPENING
A.T	AIRTIGHT
BEL.	BELOW
M.L.	MOLDED LINE
E.J	ERECTION JOINT
BHD.	BULKHEAD
MN.DK	MAIN DECK
N.T.	NON TIGHT
O.T.	OIL TIGHT
P&S	PORT & STARBOARD
R.A.	RETURN AIR
V.L.	VERTICAL LADDER
W.T.	WATERTIGHT
℄	CENTERLINE
I.L.	INCLINED LADDER

REFERENCE PLANS

NO.	PLAN NO.	TITLE
14	BSC 4650-1	ARRGT. REEFER CARGO SPACES
13	232-00-06	VERTICAL LADDERS ABV. INNERBOTTOM
12	232-00-04	INCL. LADDERS IN REFRIG. CARGO HOLDS
11	129-06-09	DETAILS FIXED GUIDES HOLDS 1, 5 TO 7
10	129-06-07	ARRGT. FIXED GUIDES - HOLDS 1, 5 TO 7
9	129-05-02	SHELL EXPANSION FR. 109-114.43 (M.43)
8	129-02-23	MAIN DK. PLTG. & GIRDERS FR. 109-114.44 (M.44)
7	129-02-15	2ND DK. PLTG. FR. 114.12 (M.12) - 126.
6	129-02-14	2ND DK. PLTG. FR. 77-114.12 (M.12)
5	129-01-52	TRANSV. SECTS. BHDS. FR. 109-114.39 (M.39)
4	129-01-46	LONG'L BHD. 35'-3 1/2" OFF ℄ P/S FR. 109-114.43 (M.43)
3	129-01-34	MISC. BHDS. BELOW MAIN DK. FR. 77-157
2	111-10-20	GEN. ARRGT. 2ND DK. FR. 114.27 - 153 1/2
1	H4650-111-10-18	GEN. ARRGT. 2ND DK. FR. 77 1/2 - 109

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 17 MAY 1977
DRAWN C/B - S IN CHARGE
CHECKED EXAMINED
REVIEWED APPROVED

PLAN NO. H4650-111-10-19 ALT. NO. 2 3

GENERAL ARRANGEMENT 2ND DECK FRS. 109-114.27 (M.27)

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-13-77				
A.B.S.					
U.S.C.G.	6-23-77				
LLOYD'S R.S.					
U.S.P.H.S.					

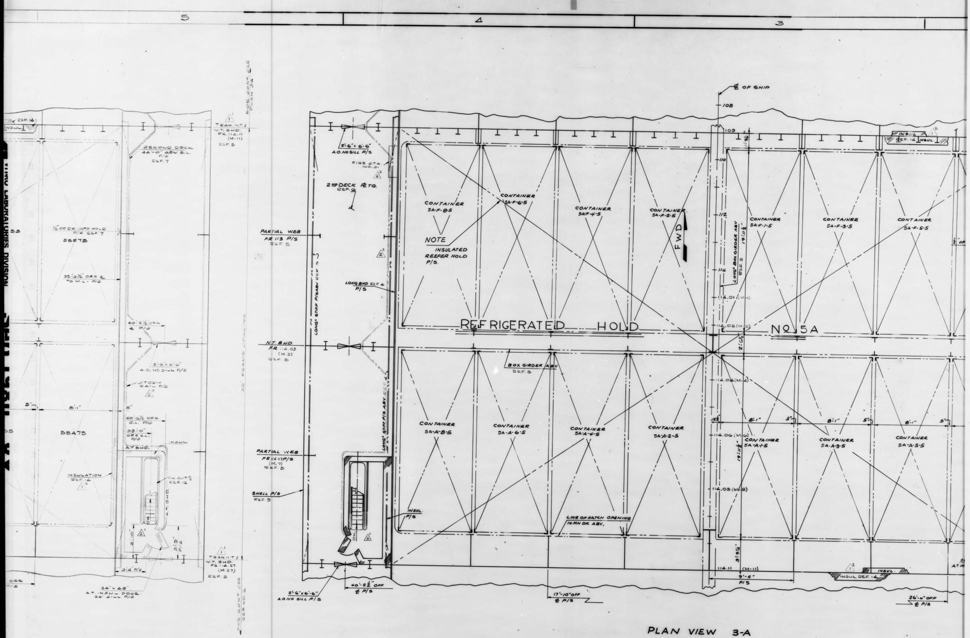
APPROVAL LETTERS

		DATE OF ISSUE			
	ALTERATION	—	—	1	2
	ENGINEERING DISTRIBUTION	5-17-7	5-27-7	8-3-7	7-28-80
MAIL	OWNERS	4		2	4
MAIL	AMERICAN BUREAU	3		3	
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U.S. NAVY				
MAIL	U.S.C.G.	3		3	
MAIL	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1		1	
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.			1	
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CDSCHAUB			1	
OFFICE	HULL DRAFT.- 21	1/2		1	1
OFFICE	MACH. DRAFT.- 22	1/2		2	
OFFICE	ELEC. DRAFT.- 23	1/2		1	
OFFICE	OUTFIT. DRAFT.- 25				
OFFICE	ESTIMATING				
OFFICE	21-1 ENGR.	1/2		1	
MISC.	PRODUCTION (SCD)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	4	13	5
	YARD DISTRIBUTION	/	5-17-7	8-9-77	
YARD	LIAO-OFFICE		1		
YARD	GEO. EASTBURG		1		
YARD	PIECE RATE - 11		1		
YARD	TEST DEPARTMENT				
YARD	QUALITY ASSURANCE		1		
YARD	PLANNING	38	7		
STRUCTURAL	GROUND ASSEMBLY		4		
STRUCTURAL	35 DEPT		2		
STRUCTURAL	P. McNAIR		1		
STRUCTURAL	H LEVY		1		
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.		2		
STRUCTURAL	OPTICAL DETAIL-46		2		
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52		1		
MACH'Y & OUTFIT.	OUTFIT. #1 PIER		1		
MACH'Y & OUTFIT.	PIPE DRAFT. - 52		2		
MACH'Y & OUTFIT.	BOILER SHOP - 58		1		
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60		1		
MACH'Y & OUTFIT.	Q-MATIC		1		
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 51				
MACH'Y & OUTFIT.	PAINT SHOP - 75		1		
OTHER	WELDING				
OTHER	MOLD LOFT - 41		1		
OTHER	BRACKET SHOP				
	TOTAL YARD DIST.	/	42		

4650-51 ACT 12

H-19

18.8 SQ.FT


5
4
3
℄ OF SHIP
108
109
110
112
114
TRAN. NT. & W.T. BHD. FR. 114.11 (M-11) REF. 5
SECOND DECK 44'-0" ABV. B.L. P/S REF. 7
½" OF DK. INTO HOLD P/S REF. 7
5B-F75
35'-3½" OFF ℄ TO M.L. - P/S
40'-2½" OFF ℄ P/S
2'-6"x6'-0" A.O. NO SILL P/S
STORM RAIL P/S
5BA75
8'-1"
40'-6½" OFF C.L. P/S
33'-0" OFF C.L. P/S
INSUL.
A.T. BHD.
INSULATION REF. 14
A.T. BHD.
TRAN. NT. & W.T. BHD. FR. 114.27 (M-27) REF. 5
3'-4" P/S
24" x 48" A.T. INSUL. DOOR 24" SILL P/S
2'-6" x 6'-6" A.O. NO SILL P/S
FIRE STA. NO. 31
2ND DECK PL TG. REF. 6
PARTIAL WEB FR 113 P/S REF. 5
LONG'L STIFF P/S ABV REF. 3
LONG BHD REF. 4 P/S
N.T. BHD FR 114.03 (M-3) REF. 5
PARTIAL WEB FR. 114.07 P/S (M-7) REF. 5
SHELL P/S REF. 3
LONG'L STIFF P/S ABV REF. 4
INSUL. P/S
2'-6"x6'-6" A.O. NO SILL P/S
40'-2½" OFF ℄ P/S
CONTAINER 5A-F-8-5
CONTAINER 5A-F-6-5
CONTAINER 5A-F-4-5
CONTAINER 5A-F-2-5
CONTAINER 5A-F-1-5
CONTAINER 5A-F-3-5
CONTAINER 5A-F-5-5
NOTE INSULATED REEFER HOLD P/S.
FWD
LONG'L BOX GIRDER ABV REF. 3
19'-11½"
REFRIGERATED HOLD
NO 5A
114.01 (M-1)
114.02 (M-2)
114.04 (M-4)
114.06 (M-6)
114.08 (M-8)
114.11 (M-11)
BOX GIRDER ABV REF. 3
2'-0"
CONTAINER 5A-A-8-5
CONTAINER 5A-A-6-5
CONTAINER 5A-A-4-5
CONTAINER 5A-A-2-5
CONTAINER 5A-A-1-5
CONTAINER 5A-A-3-5
CONTAINER 5A-A-5-5
8'-1"
5"
12½"
19'-11½"
31'-9¼"
LINE OF HATCH OPENING IN MN DK ABV.
9'-4" P/S
17'-10" OFF ℄ P/S
INSUL.
INSUL. REF. 14
26'-4" OFF ℄ P/S
INSUL. REF. 14 INSUL.

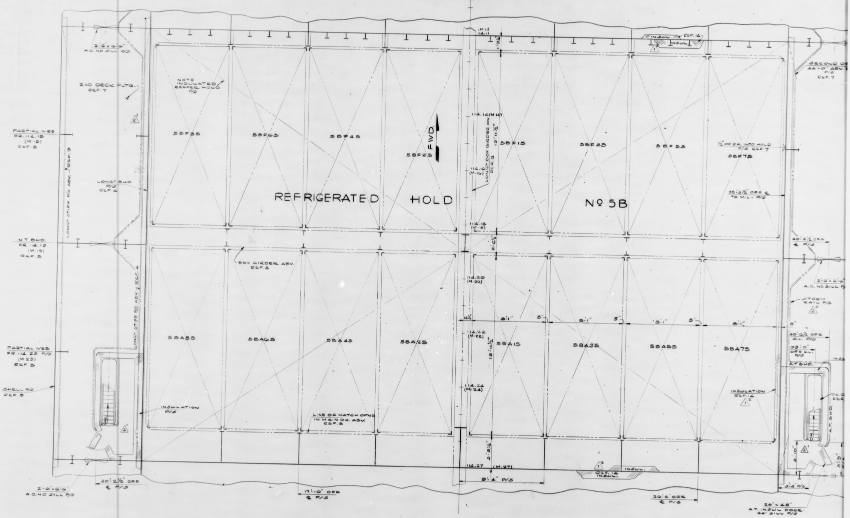
PLAN VIEW 3-A

FRAMES 109 THRU 114.11 (M-11)

BUILDERS PLAN NO. H-4650-110-10-19

FRAME 2 OF 3

GRAPHIC SERVICES 871-4161
1400 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


7
6
℄ OF SHIP
REFRIGERATED HOLD
Nº 5B
FWD.
5BF85
5BF65
5BF45
5BF25
5BF15
5BF35
5BF55
5BF75
5BA85
5BA65
5BA45
5BA25
5BA15
5BA35
5BA55
5BA75
2'-6" x 6'-6"
A.O. NO SILL P/S
2ND DECK PLTG.
REF. 7
NOTE
INSULATED
REEFER HOLD
P/S
PARTIAL WEB
FR. 114.15
(M.15)
REF. 5
LONGL STIFF P/S ABV. REF. 9
LONGL BHD.
P/S
REF. 4
N.T. BHD.
FR. 114.19
(M.19)
REF. 5
BOX GIRDER ABV.
REF. 8
LONGL STIFF P/S ABV. REF. 4
PARTIAL WEB
FR. 114.23 P/S
(M.23)
REF. 5
SHELL P/S
REF. 8
INSULATION
P/S
LINE OF HATCH OPNG.
IN MAIN DK. ABV.
REF. 8
2'-6" x 6'-6"
A.O. NO SILL P/S
40'-2½" OFF
℄ P/S
17'-10" OFF
℄ P/S
(M.11)
114.11
1'-9¼"
114.14 (M.14)
LONGL BOX GIRDER ABV
REF. 8
19'-11½"
114.16
(M-16)
114.18
(M-18)
2'-6½"
114.20
(M-20)
12⅛
8'-1"
5"
8'-1"
5"
8'-1"
5"
8'-1"
8"
114.22
(M-22)
19'-11½"
114.24
(M-24)
3'-9¼"
114.27
(M-27)
9'-4" P/S
INSUL.
REF. 14
INSUL.
REF. 14
INSUL.
26'-4" OFF
℄ P/S
SECOND DE
44'-0" ABV. B
P/S
REF. 7
½" OF DK. INTO HOLD
P/S REF. 7
35'-3½" OFF ℄
TO M.L. - P/S
40'-2½" OFF
℄ P/S
2'-6" x 6'-6"
A.O. NO SILL P/
STORM
RAIL P/S
40'-6½ OFF
C.L. P/S
39'-0"
OFF C.L.
P/S
A.T. BHD.
INSUL
INSULATION
REF. 14
DK. G
REF.
A.T. BHD.
3'-10"
3'-5"
3'-4" P/S
24" x 48"
A.T. INSUL. DOOR.
24" SILL P/S
UP
UP

PLAN VIEW 6-A

FRAMES 114.11 - 114.27
(M-11) - (M-27)

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

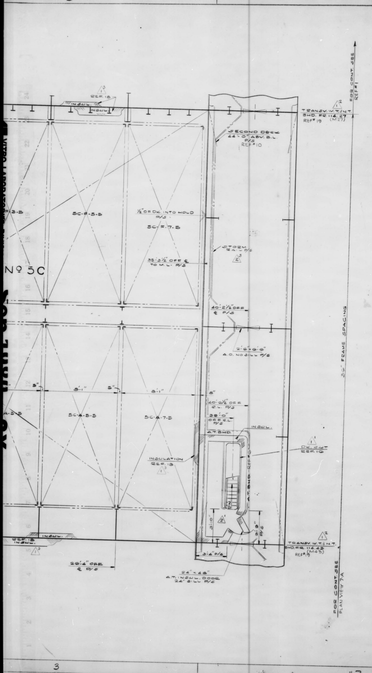
BUILDERS PLAN NO. H-4650-110-10-19

FRAME 3 OF 3

BUILDERS PLAN NO. H-4650-110-10-20

FRAME 1 OF 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


REF. 18
INSUL.
INSUL.
TRANSV. W.T. & N.T. BHD. FR. 114.27 (M27) REF# 19
FOR CONT. SEE REF# 1
SECOND DECK 44'-0" ABV. B.L. P/S REF# 10
5C-F-5-5
½" OF DK. INTO HOLD P/S
5C-F-7-5
STORM RAIL P/S
35'-3½" OFF ℄ TO M.L. P/S
Nº 5C
40'-2½" OFF ℄ P/S
2'-6" x 6'-6" A.O. NO SILL P/S
36" FRAME SPACING
5"
8'-1"
5"
8'-1"
8"
40'-6½" OFF C.L. P/S
38'-0" OFF C.L. P/S
5C-A-5-5
5C-A-7-5
A.T. BHD.
INSUL.
DK. CUT REF. 16
INSULATION REF. 13
A.T. BHD. REF# 6
3'-10"
3'-9" P/S
REF. 13 INSUL.
INSUL.
TRANSV. W.T. & N.T. BHD. FR. 114.43 (M43) REF# 19
3'-4" P/S
26'-4" OFF ℄ P/S
24" x 48" A.T. INSUL. DOOR 24" SILL P/S
FOR CONT. SEE PLAN VIEW 7-A

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-27-77	3,7 3,7, 10,14 3,7, 10,14	1. DECK CUTS FOR INCLINED LADDERS REFERENCED. 2. BHDS 114.27(M.27), 114.43 (M.43), 125, & 141 LABELED W.T. & N.T. 3- CARGO HOLD INSULATION REFERENCED. ABV. ALTS. TO SUIT G.G. SHARP APPVL. LTR DATED JUNE 13, 1977	C.O.S.	JLM
2.	7-24-80	2,5,6 8,9,12 6,8 3,5, 6,8, 9,12, 13,15	1. LADDER OPENINGS REVISED 2- FIRE STATIONS NO. 32 & 33 INDICATED. 3- STORM RAILS IN 2ND DK. PASSAGEWAY RELOCATED FROM SHELL TO INBD. LONG'L BHD.	CDS	7/24/80 JLM

· GENERAL NOTES ·

1- ALL DIMENSIONS ARE SAME P/S UNLESS OTHERWISE NOTED.
2- ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3- SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC. ARE CLEAR OPENING.
4- FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BULKHEADS, GIRDERS, ETC, EXACT LOCATIONS WILL BE TAKEN FROM STRUCTURAL PLANS.
5- ALL VERTICAL LADDERS & LADDER RUNGS SHALL BE MINIMUM 16" WIDE INSIDE STRINGERS & RETURNS RESPECTIVELY, UNLESS OTHERWISE NOTED.

ABBREVIATIONS

ABV	ABOVE
A.O.	ACCESS OPENING
A.T.	AIRTIGHT
BEL.	BELOW
M.L.	MOLDED LINE
E.J.	ERECTION JOINT
O.T.	OIL TIGHT
MN. DK	MAIN DECK
N.T.	NON TIGHT
BHD	BULKHEAD
P. & S.	PORT & STARBOARD
STAN.	STANCHION
V.L.	VERTICAL LADDER
W.T.	WATER TIGHT
℄	CENTERLINE
I.L.	INCLINED LADDER

REFERENCE PLANS

NO.	PLAN NO.	TITLE
21	144-00-01	MANHOLE LIST FWD FR 157
20	129-02-54	MN DK PLTG & GIRDERS FR 114.44 (M44) TO 153
19	H4650-129-01-07	TRANSV. SECTS, BHDS FR 114.11 (M11) - 114.35 (M35)
18	BSC-4650-1	ARRGT. REEFER CARGO SPACES
17	H4650-232-00-06	VERT. LADDERS ABV. INNERBOTTOM
16	232-00-04	INCL. LADDERS IN REFRIG CARGO HOLDS
15	129-06-04	DETAILS - CONVERT. GUIDES - HOLDS 2,3,4 & 8
14	129-06-03	ARRGT - CONVERT GUIDES HOLD NO. 4 & 8
13	129-05-03	SHELL EXPANSION - FR. 114.43 (M43) - 153
12	129-05-02	SHELL EXPANSION - FR. 109 - 114.43 (M43)
11	129-02-23	MAIN DECK PLTG & FRAMING FR 109 - 114.44 (M44)
10	129-02-15	2ND DECK PLTG & GIRDERS - FR 114.12 (M12) - 126
9	129-02-53	2ND DECK PLTG. & GIRDERS FR. 126-153½
8	129-01-44	LONG'L BHDS. ON TANK TOP - FR. 114.43 (M43) - 153
7	129-01-46	LONG'L BHDS. ON TANK TOP - FRS - 109 - 114.43 (M43)
6	129-01-34	MISC. BHDS BELOW MAIN DECK - FR. 77 - 157
5	129-01-12	TRANSV. SECTS. BHDS. FR. 142 - 156
4	129-01-10	TRANSV. SECTS. BHDS FR 114.44 (M44) - 141
3	129-01-32	TRANSV. SECTS. BHDS. FR. 109 - 114.39 (M.39)
2	111-10-21	GEN. ARRG'T. 2ND DK. FR. 153½ - 203
1	H4650-111-10-19	GEN. ARRGT. 2ND DK. FR. 109 - 114.27 (M27)

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" : 1'-0"
DATE 17 MAY 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-20
ALT. NO. 2

GENERAL ARRANGEMENT 2ND DECK FRS. 114.27-153½ (M.27)

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6.13.77				
A.B.S.					
U.S.C.G.	6.23.77				
LLOYD'S R.S.					
U.S.P.H.S.					

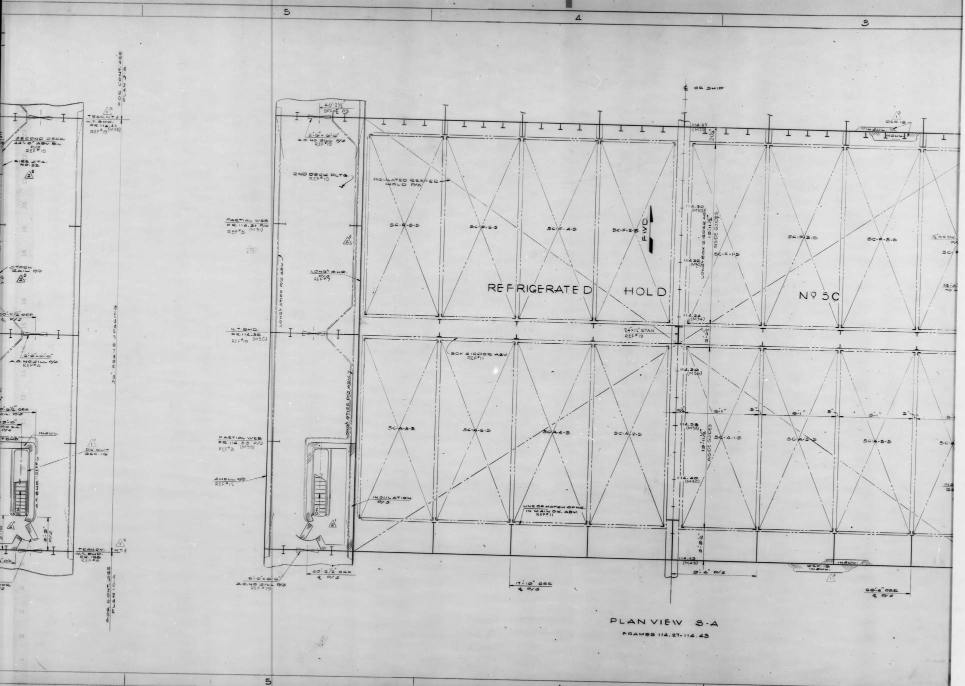
		DATE OF ISSUE			
	ALTERATION	–	–	1	2
	ENGINEERING DISTRIBUTION	5-17-77	5-17-77	8-8-77	7-25-80
MAIL	OWNERS	7		2	4
	AMERICAN BUREAU	3		3	
	LLOYD'S R.S.				
	U.S.M.A.				
	U.S. NAVY				
	U.S.C.G.	3		3	
	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1		1	
	AM. BU. INSP.			1	
	LLOYD'S INSP.				
	U.S.M.A. INSP.			1	
	U.S. NAVY INSP.				
	U.S.C.G. INSP.			1	
	CDSCHRUB			1	
OFFICE	HULL DRAFT. - 21		1P	1	1
	MACH. DRAFT. - 22		1P	2	
	ELEC. DRAFT. - 23		1P	1	
	OUTFIT. DRAFT. - 25				
	ESTIMATING				
	21-1 ENGR		1P	1	
MISC.	PRODUCTION (SCD)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	11	7	18	5
	YARD DISTRIBUTION	/	5-17-77	8-9-77	
YARD	HDQ-OFFICE			1	
	GEO. EASTBURG			1	
	PIECE RATE - 11			1	
	TEST DEPARTMENT				
	QUALITY ASSURANCE			1	
	PLANNING		1P	7	
STRUCTURAL	GROUND ASSEMBLY			4	
	35 DEPT			2	
	P. McNAIR			1	
	H. LEVY			1	
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.			2	
	OPTICAL DETAIL - 45			2	
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
	OUTFIT. #1 PIER			1	
	PIPE DRAFT. - 52			2	
	BOILER SHOP - 58			1	
	OUTSIDE MACH. - 60			1	
	Q-MATIC			1	
	ELECTRIC SHOP - 70				
	SHEET MET. SHOP - 74				
	COPPER SHOP - 81				
	PAINT SHOP - 75			1	
OTHER	WELDING				
	MOLD LOFT - 41			1	
	BRACKET SHOP				
	TOTAL YARD DIST.	/	4	34	

4650-51-ACT 13

H-20

37.5 SQ. FT.

SCHED. SUB 3-7-7


5
4
3
℄ OF SHIP
REFRIGERATED HOLD
Nº 5C
FWD
SECOND DECK 44'-0" ABV. B.L. P/S REF#10
FIRE STA. NO. 22
STORM RAIL P/S
2'-6"×6'-0" A.O. NO SILL P/S REF#4
TRAN. N.T. & W.T. BHD. FR. 114.43 REF#19 (M43)
FOR CONT. SEE PLAN 3A
36" FRAME SPACING
DK. CUT REF. 16
TRANSV. W.T. BHD. FR. 128 REF#4
N.T. &
FOR CONT. SEE PLAN 10-A
40'-2½" OFF ℄ P/S
2'-6"×6'-0" A.O. NO SILL P/S REF#19
2ND DECK PLTG. REF#10
INSULATED REEFER HOLD P/S
PARTIAL WEB FR. 114.31 P/S REF#3 (M31)
LONG'L STIFF P/S ABV.
LONG'L BHD. P/S REF#7
N.T. BHD. FR. 114.35 REF#19 (M35)
PARTIAL WEB FR. 114.39 P/S REF#3 (M39)
SHELL P/S REF#12
INSULATION P/S
BOX GIRDER ABV. REF#11
LINE OF HATCH OPNG. IN MAIN DK. ABV. REF#1
5C-F-8-S
5C-F-6-S
5C-F-4-S
5C-F-2-S
5C-F-1-S
5C-F-3-S
5C-F-5-S
5C-A-8-S
5C-A-6-S
5C-A-4-S
5C-A-2-S
5C-A-1-S
5C-A-3-S
5C-A-5-S
114.27 (M27)
114.30 (M30)
114.32 (M32)
114.34
114.36 (M36)
114.38 (M38)
114.40 (M40)
114.43 (M43)
LONG'L BOX GIRDER ABV. 19'-11½" INSIDE GUIDES
24×12 STAN REF#19
19'-11½" INSIDE GUIDES
8'-1"
5"
12½
3'-9¾"
9'-4" P/S
17'-10" OFF ℄ P/S
26'-4" OFF ℄ P/S
REF. 18
INSUL.
REF. 18 INSUL.
½" OF DK.

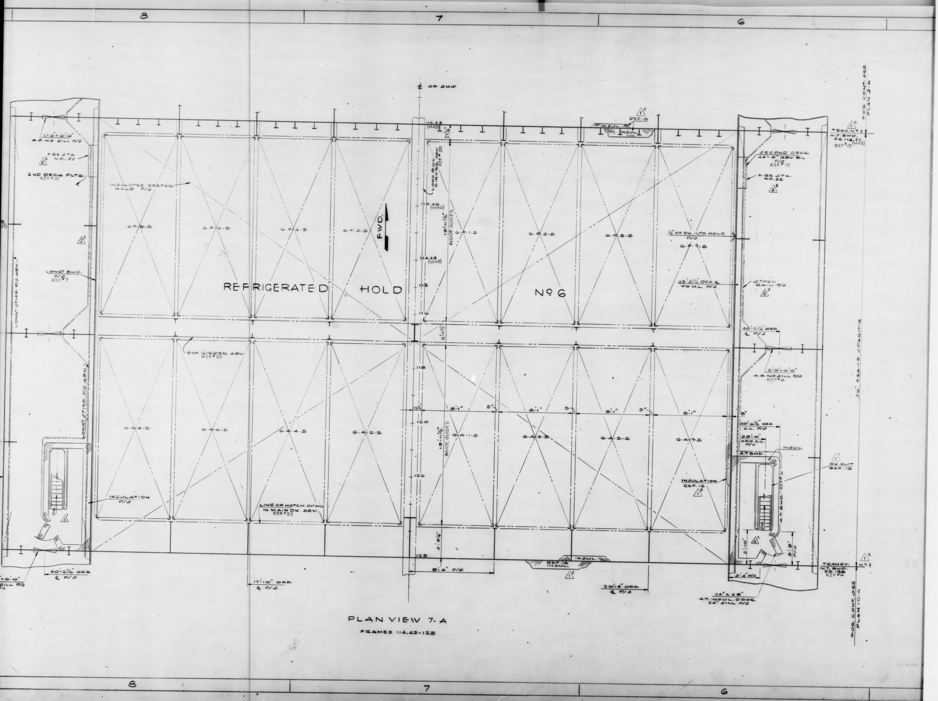
PLAN VIEW 3-A

FRAMES 114.27-114.43

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 110-10-20

FRAME 2 OF 6


8
7
6
℄ OF SHIP
2'-6"x6'-6"
A.O. NO SILL P/S
FIRE STA. NO. 32
2ND DECK PLTG. REF#10
INSULATED REEFER HOLD P/S
LONGT BHD. P/S REF#7
LONGT STIFF P/S ABV.
114.43 (M43)
21¼"
LONG BOX GIRDER ABV REF#20
114.46 (M46)
114.48 (M48)
115
116
118
120
122
125
19'-11½" INSIDE GUIDES
FWD.
6-F-8-5
6-F-6-5
6-F-4-5
6-F-2-5
6-F-1-5
6-F-3-5
6-F-5-5
6-F-7-5
REFRIGERATED HOLD
No 6
2'-0½"
BOX GIRDER ABV. REF#20
6-A-8-5
6-A-6-5
6-A-4-5
6-A-2-5
6-A-1-5
6-A-3-5
6-A-5-5
6-A-7-5
12½
8'-1"
5"
INSULATION P/S
LINE OF HATCH OPNG IN MAIN DK. ABV. REF#20
3'-9¼"
40'-2½" OFF ℄ P/S
17'-10" OFF ℄ P/S
8'-4" P/S
REF. 18
IN SUL.
INSUL.
REF. 18 INSUL.
26'-4" OFF ℄ P/S
TRAN. N.T. ℄
W.T. BHD. FR 114.43 REF#19 (M43)
SECOND DECK 44'-0" ABV. B.L P/S REF#10
FIRE STA. NO. 32
½" OF DK. INTO HOLD P/S
35'-3½" OFF ℄ TO M.L. P/S
STORM RAIL P/S
40'-2½" OFF ℄ P/S
2'-6"x6'-6"
A.O. NO SILL P/S REF#4
8"
40'-6½" OFF C.L. P/S
39'-0" OFF C.L. P/S
A.T. BHD.
INSUL.
DK. CUT REF. 16
INSULATION REF. 18
A.T. BHD. REF#6
3'-10"
3'-9" P/S
3'-4" P/S
24"x48" A.T. INSUL. DOOR 24" SILL P/S
TRANSV. W.T. BHD. FR. 125 REF#4
N.T. ℄
FOR CONT. SEE PLAN 3-A
FOR CONT. SEE PLAN 10-A
3'6" FRAME SPACING

PLAN VIEW 7-A

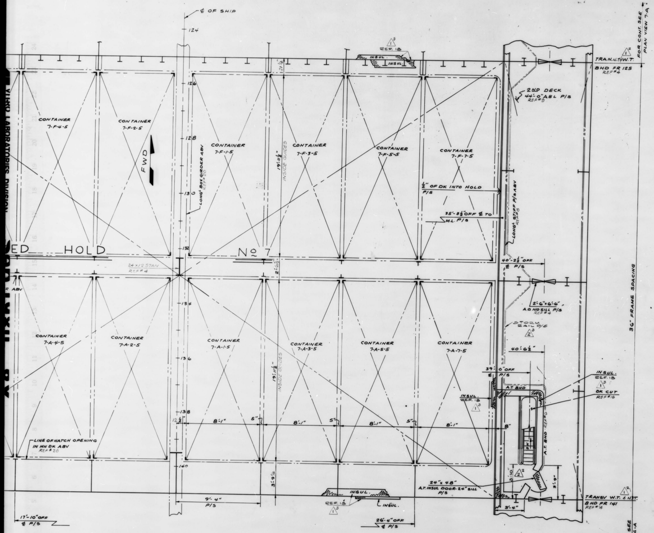
FRAMES 114.43-125

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

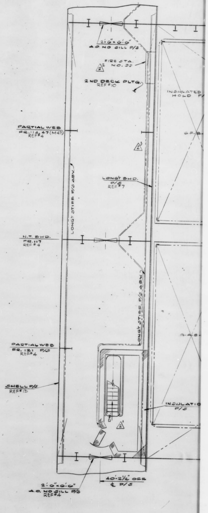
BUILDERS PLAN NO. H-4650-110-10-20

FRAME 3 OF 6


℄ OF SHIP
124
126
128
130
132
134
136
138
140
CONTAINER 7-F-4-5
CONTAINER 7-F-2-5
CONTAINER 7-F-1-5
CONTAINER 7-F-3-5
CONTAINER 7-F-5-5
CONTAINER 7-F-7-5
CONTAINER 7-A-4-5
CONTAINER 7-A-2-5
CONTAINER 7-A-1-5
CONTAINER 7-A-3-5
CONTAINER 7-A-5-5
CONTAINER 7-A-7-5
FWD
ED HOLD No 7
LONGᴸ BOX GIRDER ABV REF#20
19'-11½" INSIDE GUIDES
21¼"
2'-6½"
3'-9¼"
24 x 12 STAN REF#4
R ABV
REF. 18
INSUL.
½" OF DK INTO HOLD P/S
35'-8½" OFF ℄ TO M.L. P/S
2ND DECK 44'-0" ABL P/S REF#9
TRAN. N.T.&W.T. BHD FR 125 REF#4
FOR CONT. SEE PLAN VIEW 7-A
LONGᴸ STIFF P/S ABV REF#8
40'-2½" OFF ℄ P/S
2'-6"x6'-6" A.O. NO SILL P/S REF#4
STORM RAIL P/S
36" FRAME SPACING
40'-6½"
39'-0" OFF ℄ P/S
A.T. BHD
INSUL. REF. 18
DK CUT REF#16
A.T. BHD REF#6
DN
12½"
8'-1"
5"
8"
3'-10"
3'-9"
3'-4"
24" x 48" A.T. INSUL DOOR-24" SILL P/S
TRANSV W.T. & N.T. BHD FR 141 REF#4
LINE OF HATCH OPENING IN MN DK ABV REF#20
9'-4" P/S
17'-10" OFF ℄ P/S
26'-4" OFF ℄ P/S
FOR CONT. SEE PLAN VIEW 14-A
1
2
3

PLAN VIEW 10-A

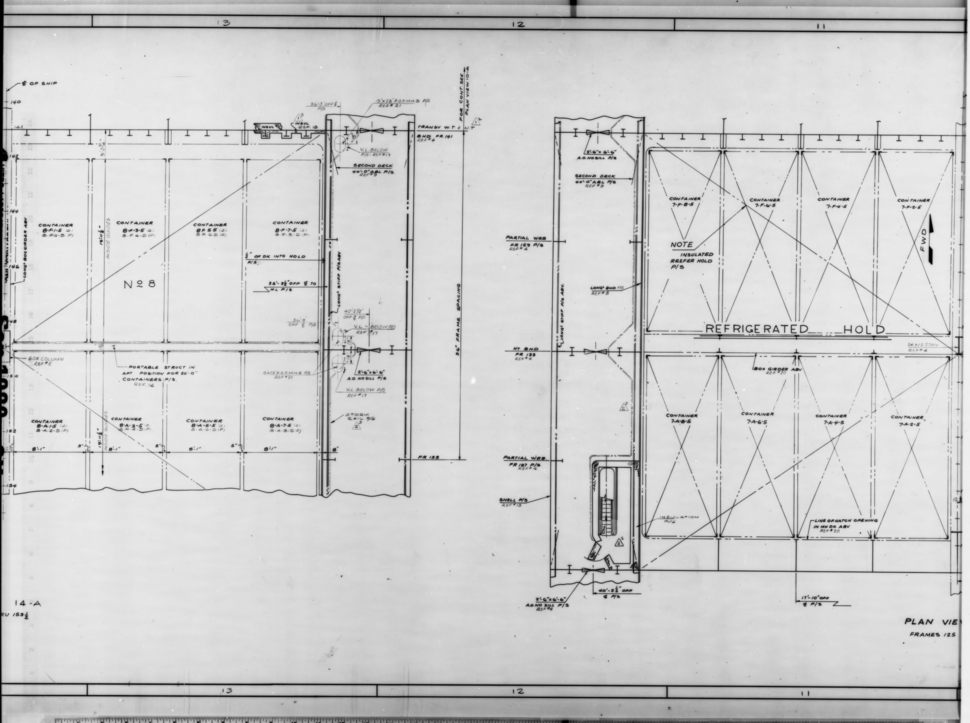
FRAMES 125 THRU 141


2'-6"x6'-6" A.O. NO SILL P/S
FIRE STA. NO. 33
2ND DECK PLTG. REF#10
INSULATED HOLD P/
PARTIAL WEB FR. 114, 47 (M47) REF#4
LONGᴸ STIFF P/S ABV.
LONGᴸ BHD. P/S REF#7
N.T. BHD. FR. 117 REF#4
LONGᴸ STIFF P/S ABV.
PARTIAL WEB FR. 121 P/S REF#4
SHELL P/S REF#13
INSULATIO P/S
DN
2'-6"x6'-6" A.O. NO SILL P/S REF#4
40'-2½" OFF ℄ P/S
2
3

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-20

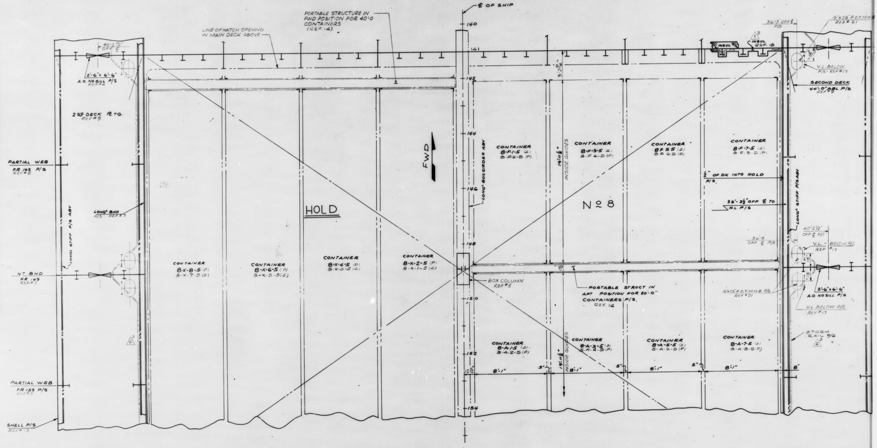
FRAME 4 OF 6


13
12
11
℄ OF SHIP
140
141
142
144
146
148
150
152
154
15"x23" F.O.T.M.H.B P/S REF #21
36'-3" OFF ℄ P/S
INSUL
INSUL REF. 18
TRANSV W.T. & N.T.
BHD FR. 141 REF #4
FOR CONT SEE PLAN VIEW 10-A
V.L. BELOW P/S - REF #17
SECOND DECK 44'-0" ABL P/S REF #9
CONTAINER 8-F-1-5 (S) 8-F-2-5 (P)
CONTAINER 8-F-3-5 (S) 8-F-4-5 (P)
CONTAINER 8F 55 (S) 8F 65 (P)
CONTAINER 8-F-7-5 (S) 8-F-8-5 (P)
LONG'L BOX GIRDER ABV
19'-11 1/2" INSIDE GUIDES
1/2" OF DK INTO HOLD P/S
No 8
35'-3 1/2" OFF ℄ TO M.L P/S
LONG'L STIFF P/S ABV
40'-2 1/2" OFF ℄ P/S
36'-3" OFF ℄ P/S
V.L. - BELOW P/S REF #17
36" FRAME SPACING
BOX COLUMN REF #5
PORTABLE STRUCT IN AFT POSITION FOR 20'-0" CONTAINERS P/S REF 14
15"x23" F.O.T.M.H.B P/S REF #21
2'-6"x6'-6" A.O. NO SILL P/S
V.L. BELOW P/S REF #17
STORM RAIL P/S
CONTAINER 8-A-1-5 (S) 8-A-2-5 (P)
CONTAINER 8-A-3-5 (S) 8-A-4-5 (P)
CONTAINER 8-A-5-5 (S) 8-A-6-5 (P)
CONTAINER 8-A-7-5 (S) 8-A-8-5 (P)
8'-1"
5"
8'-1"
5"
8'-1"
5"
8'-1"
8"
FR 153
14-A
RU 153 1/2
2'-6"x6'-6" A.O. NO SILL P/S
SECOND DECK 44'-0" ABL P/S REF #9
PARTIAL WEB FR 129 P/S REF #4
LONG'L BHD P/S REF #8
LONG'L STIFF P/S ABV.
NT BHD FR 133 REF #4
PARTIAL WEB FR 137 P/S REF #4
SHELL P/S REF #13
INSULATION P/S
2'-6"x6'-6" A.O. NO SILL P/S REF #4
40'-2 1/2" OFF ℄ P/S
CONTAINER 7-F-8-5
CONTAINER 7-F-6-5
CONTAINER 7-F-4-5
CONTAINER 7-F-2-5
NOTE INSULATED REEFER HOLD P/S
FWD
REFRIGERATED HOLD
24x12 STAN REF #4
BOX GIRDER ABV REF #20
CONTAINER 7-A-8-5
CONTAINER 7-A-6-5
CONTAINER 7-A-4-5
CONTAINER 7-A-2-5
LINE OF HATCH OPENING IN MN DK ABV REF #20
17'-10" OFF ℄ P/S
12 1/2
PLAN VIE
FRAMES 125

BUILDERS PLAN NO. H-4650-110-10-20

FRAME 5 OF 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910



PORTABLE STRUCTURE IN FWD POSITION FOR 40'-0 CONTAINERS (REF. 14)
LINE OF HATCH OPENING IN MAIN DECK ABOVE
℄ OF SHIP
140
141
142
144
146
148
150
152
154
40'-2½" OFF ℄
2'-6" x 6'-6" A.O. NO SILL P/S REF#4
2ND DECK PL TG. REF#9
PARTIAL WEB FR 145 P/S REF#5
LONG'L BHD P/S REF#7
LONGL STIFF P/S ABV
NT BHD FR 149 REF#5
PARTIAL WEB FR 153 P/S REF#5
SHELL P/S REF#13
FWD
HOLD
LONG'L BOX GIRDER ABV
CONTAINER 8-X-8-5 (P) 8-X-7-5 (S)
CONTAINER 8-X-6-5 (P) 8-X-5-5 (S)
CONTAINER 8-X-4-5 (P) 8-X-3-5 (S)
CONTAINER 8-X-2-5 (P) 8-X-1-5 (S)
BOX COLUMN REF#5
3'-2¾"
19'-11½" INSIDE GUIDES
CONTAINER 8-F-1-5 (S) 8-F-2-5 (P)
CONTAINER 8-F-3-5 (S) 8-F-4-5 (P)
CONTAINER 8F 5 5 (S) 8F 6 5 (P)
CONTAINER 8-F-7-5 (S) 8-F-8-5 (P)
Nº 8
INSUL
INSUL REF. 18
36'-3" OFF ℄ P/S
15"x23" F.O.T.M.H.B REF#21
V.L. BELOW P/S - REF#17
SECOND DECK 44'-0" ABL P/S REF#9
½" OF DK INTO HOLD P/S.
35'-3½" OFF ℄ TO M.L. P/S
LONG'L STIFF P/S ABV
40'-2½" OFF ℄ P/S
36'-3" OFF ℄ P/S
V.L. - BELOW P/S REF #17
18"
PORTABLE STRUCT IN AFT POSITION FOR 20'-0" CONTAINERS P/S. REF. 14
15"x23" F.O.T.M.H.B P/S REF#21
2'-6"x6'-6" A.O. NO SILL P/S
V.L. BELOW P/S REF#17
STORM RAIL P/S
CONTAINER 8-A-1-5 (S) 8-A-2-5 (P)
CONTAINER 8-A-3-5 (S) 8-A-4-5 (P)
CONTAINER 8-A-5-5 (S) 8-A-6-5 (P)
CONTAINER 8-A-7-5 (S) 8-A-8-5 (P)
12½"
8'-1"
5"
8'-1"
5"
8'-1"
5"
8'-1"
8"

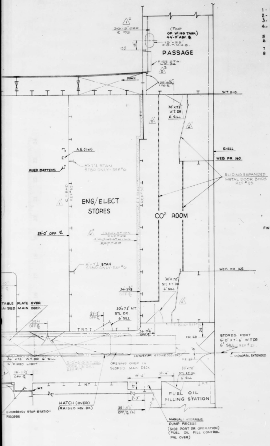
PLAN VIEW 14-A

FRAMES 141 THRU 153½

BUILDERS PLAN NO. H-4650-110-10-20

FRAME 6 OF 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


(TOP
OF WING TANK)
44'-0" ABV. ℞
36'-3" OFF ℄ P/S
15"×23" F.O.T.M.H.B.
155
18"
PASSAGE
FIRE STA. NO. 34
DOWN
39'-6⅝" TO ℄
W.T. BHD.
30"×72" W.T. DR 6" SILL
SHELL
WEB FR 160
A.E. (TYP)
FIXED BATTENS
8"×7"⊥ STAN STBD ONLY - REF#6
SLIDING EXPANDED METAL DOOR BHDS REF#23
F.T. BHD REF#32
ENG/ELECT STORES
CO² ROOM
25'-0" OFF ℄
INSULATION REF#39
S.M. SHEATHING REF#39
8"×7"⊥ STAN STBD ONLY - REF#6
WEB FR 165
30"×72" STL. F.T. DR 6" SILL
34'-9⅞" OFF ℄
TABLE PLATE OVER RAISED MAIN DECK
30"×72" N.T. STL. DR. 6" SILL
29'-9" OFF ℄
22'-1" OFF ℄
T N.T. T
36'-9⅛" OFF ℄
F.T. BHD REF#32
24"
FR 168
STORES PORT 6'-0"×7'-6" W.T. DR 6" SILL - REF#21
MONORAIL EXTENDED
CONVEYOR STOWED (OVER)
FR 169
36"×72" W.T. DR 6" SILL W/FIXED LIGHT
5'-0"×6'-8" F.T. DBL DOOR - 8" SILL REF#17
OPENING OVER IN SLOPED MAIN DECK
19'-11½" OFF ℄
30"×72" STL. F.T. DR 6" SILL
39'-4"
4'-6"
N.T
W.T.
12"
2'-3"
FUEL OIL FILLING STATION
HATCH (OVER) (RAISED MN. DK)
35'-4½" OFF ℄ (S)
EMERGENCY STOP STATION RECESS
MANUAL-HYDRAULIC PUMP RECESS (SIDE PORT DR. OPERATION) (FUEL OIL FILL CONTROL PNL OVER)

GENERAL NOTES

1 - STBD SIDE IS SIMILAR TO OPPOSITE HAND OF PORT, UNLESS OTHERWISE NOTED
2 - ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3 - SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC., ARE CLEAR OPENINGS.
4 - FOR CUTTING OF ALL ACCESS OPENINGS IN WEB FRAMES ETC, LOCATION & SIZE TO BE TAKEN FROM STRUCTURAL PLANS.
5 ALL INCLINED LADDERS SHALL BE A MINIMUM OF 28" WIDE INSIDE OF STRINGERS.
6 ALL VERTICAL LADDERS & LADDER RUNGS WILL BE A MINIMUM 16" WIDE INSIDE STRINGERS & - RETURNS RESPECTIVELY UNLESS OTHERWISE NOTED.
7 CO² BOTTLES TO BE KEPT CLEAR OF M.H. IN CO² RM.
8 IN THE UNITIZED CARGO HOLD THERE SHALL BE CONTINUOUS 1¼" DIA ROUND BARS WELDED WITHIN 4" OF THE DECK & WITHIN 4" OF THE DECKHEAD AROUND THE PERIPHERY OF EACH LEVEL IN ALL AREAS WHERE UNITIZED CARGO MAY BE CARRIED.

ABBREVIATIONS

ABV - ABOVE
A.H. - ACCESS HOLE
A.E. - AIR ESCAPE

BHD - BULKHEAD
℞ - BASELINE

CL. OPNG - CLEAR OPENING
℄ - CENTERLINE
C.O. - CARGO OIL
COAM. - COAMING
CONT. - CONTINUATION

DIA. - DIAMETER
DK. - DECK
DN. - DOWN
DR - DOOR

E.M. - EXPANDED METAL
ENG. - ENGINEER
ELEC. - ELECTRICAL
ESC. - ESCAPE

F.O. - FUEL OIL
FR - FRAME
F.T. - FUMETIGHT
FWD - FORWARD
F.Q.A.W.T. - FLUSH QUICK ACTING WATERTIGHT
F.W.T. M.H. B.P. - FLUSH WATER TIGHT MANHOLE BOLTED PLATE
F.O.T. - FLUSH OILTIGHT

G.T. - GAS TIGHT
GDR - GIRDER

I.L. - INCLINED LADDER
INSUL - INSULATION
HTR - HEATER

LKR - LOCKER
L.R. - LADDER RUNGS

MACHY. - MACHINERY
M.H. - MANHOLE
M.J.D. - METAL JOINER DOOR
MN - MAIN

N.T. - NONTIGHT

OPNG - OPENING
O.T. - OILTIGHT
OUTBD - OUTBOARD

PLATF. - PLATFORM
P/S - PORT & STARBOARD
℞ - PLATE

RAD. - RADIUS

STAN - STANCHION
STL - STEEL

V.L. - VERTICAL LADDER

W.T. - WATERTIGHT
WEAT. - WEATHERTIGHT

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	7-27-77	4 3,6 5	1-BHD. 25'-0" OFF ℄ FRS. 157 TO 24" AFT 167 CHANGED FROM N.T. TO F.T. ABV. ALT. TO SUIT G.G. SHARP APPVL LTR. DATED JUNE 13, 1977 2-MANHOLE ADDED 18" FWD. FR. 155, 36'-3" OFF ℄. 3-W.T. DOOR IN BHD. 170 CHANGED FROM 13'-6" TO 14'-11" OFF ℄. ALT. 2 & 3 TO SUIT STRUCT. PLANS	C.D.S.	JLM
2	7-24-80	3 3,6 3 6	1-EXPANDED METAL BHDS. IN CO₂ ROOM REVISED. 2-FIRE STATIONS NO. 24 & 35 INDICATED. 3-INSULATION & SHEATHING ADDED TO ENG-ELECT. STOREROOM. 4-BATTENS-PORT SIDE-FRS 160-165 REVISED.	CDS	JLM

NO.		PLAN NO.	TITLE
39		176-00-02	INSULATION & SHT. MET. SHEATHING
38		129-02-19	2ND DK PLTG & GIRDERS AFT FR 153½
37		129-01-44	LONGL. BHDS ON TANK TOP FR 114.43(M43)-153
36		129-02-26	MAIN DK PLTG & GIRDERS FR 170-182
35		232-00-09	INCLINED LADDERS IN CARGO HOLDS NO. 1, 2, 3, 4 & 8
34		129-02-24	MAIN DK PLTG & GIRDERS FR 153½ AFT
33		129-01-14	TRANSV SECT. BHDS. FRS & STAN FR 157-170
32		129-01-35	MISC BHDS BEL MAIN DK FR 157 AFT
31		129-01-13	TRANSV SECT. BHDS. FRS & STAN FR 157-170
30		232-00-42	LASHING EYES, BATTENS, & WALKWAY - HOLD #9
29		232-00-32	STORES CONVEYOR
28		232-00-29	ARRGT. STORES CONV'R & INST. DETAILS - 2ND DK.
27		232-00-22	ENGRS/ELEC. STORES - 2ND DECK
26		232-00-02	INCLINED LADDERS BEL. MAIN DK. FR. 157 AFT
25		232-00-01	VERTICAL LADDERS ABV. INNER BOTTOM
24		231-00-04	GUARD RAILS AROUND HATCHES AFT FR. 157
23		177-00-01	EXPANDED METAL BHD & DETAILS
22		144-00-02	MANHOLE LIST AFT FR. 157
21		143-00-01	SIDE PORTS ARRGT. & DETAILS. AFT FR. 157
20		142-00-03	DETAILS OF HATCH COVERS & PORT. PLATF. HOLD #9
19		142-00-02	ARRGT. OF HATCH COVERS & PORT. PLATF. HOLD #9
18		142-00-01	HATCH & SCUTTLE LIST
17		141-00-01	DOOR SCHEDULE
16		129-01-37	CARGO OIL TANK FR 196-205
15		129-01-33	GARBAGE CHUTE & COLLECTING TANK
14		129-05-04	SHELL EXPANSION - FR. 153½ - AFT
13		129-02-25	MN DK PLTG & GIRDERS FR 202-238 & RAISED MN DK
12		129-02-18	2ND DK. PLTG & GDRS. FR. 153 - AFT
11		129-01-35	MISC BHDS. BELOW MAIN DK - FR. 157 - AFT
10		129-01-31	LONGL BHDS. ON 2ND DK. FR 157 - AFT
9		129-01-18	TRANSV. SECT. BHDS. FR. 196-211
8		129-01-17	TRANSV. SECT. BHDS. FR. 185-195
7		129-01-16	TRANSV. SECT. BHDS. FR. 171-184
6		129-01-15	TRANSV. SECT. BHDS. FR. 157-170
5		111-10-29	GEN. ARRGT. MAIN DK. FR. 203 - AFT
4		111-10-28	GEN. ARRGT. MAIN DK. FR. 153½ - 203
3		111-10-26	GEN. ARRGT. MAIN DK. FR. 114.27 (M27) - 153½
2		111-10-22	GEN. ARRGT. 2ND DK. FR. 203 - AFT
1		H4650-111-10-20	GEN. ARRGT. 2ND DK. FR. 114.27 (M27) - 153½

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 17 MAY 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-21
ALT. NO. 2⁴

GENERAL
ARRANGEMENT
2ND DECK
FRS. 153½-203

HULL	4650-51				
APPROVAL LETTERS					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-13-77				
A.B.S.					
U.S.C.G.	6-23-77				
LLOYD'S R.S.					
U.S.P.H.S.	5-24-77				

		DATE OF ISSUE			
	ALTERATION	–	1	2	2
	ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]
MAIL	OWNERS	3		2	4
	AMERICAN BUREAU	5		5	
	LLOYD'S R.S.				
	U.S.M.A.				
	U.S. NAVY				
	U.S.C.G.	3		3	
	JOINER CONT'R.				
	USPH	3		3	
INSPECTION	OWNER'S INSP.	1		1	
	AM. BU. INSP.			1	
	LLOYD'S INSP.				
	U.S.M.A. INSP.			1	
	U.S. NAVY INSP.				
	U.S.C.G. INSP.			1	
	CO SCHAUB			1	
OFFICE	HULL DRAFT - 21		1	1	1
	MACH. DRAFT - 22		1	2	
	ELEC. DRAFT - 23		1	1	
	OUTFIT. DRAFT - 25				
	ESTIMATING				
	21-1 Engr.		1	1	
MISC.	PRODUCTION (SCD)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	[illegible]	[illegible]	[illegible]	5
	YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]	
YARD	[illegible]			1	
	[illegible]			1	
	PIECE RATE - 11			1	
	TEST DEPARTMENT				
	[illegible]			1	
	PLANNING		1	3	
STRUCTURAL	GROUND ASSEMBLY			6	
	25 DEPT			2	
	P. McNAIR			1	
	H. LEVY			1	
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.			2	
	OPTICAL DETAIL - 46			2	
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52			1	
	OUTFIT. #1 PIER			1	
	PIPE DRAFT - 82			2	
	BOILER SHOP - 56			1	
	OUTSIDE MACH. - 60			1	
	[illegible]			1	
	ELECTRIC SHOP - 70				
	SHEET MET. SHOP - 74				
	COPPER SHOP - 51				
	PAINT SHOP - 78			1	
OTHER	WELDING				
	MOLD LOFT - 41			1	
	BRACKET SHOP				
	TOTAL YARD DIST.	1	[illegible]	[illegible]	

H-21

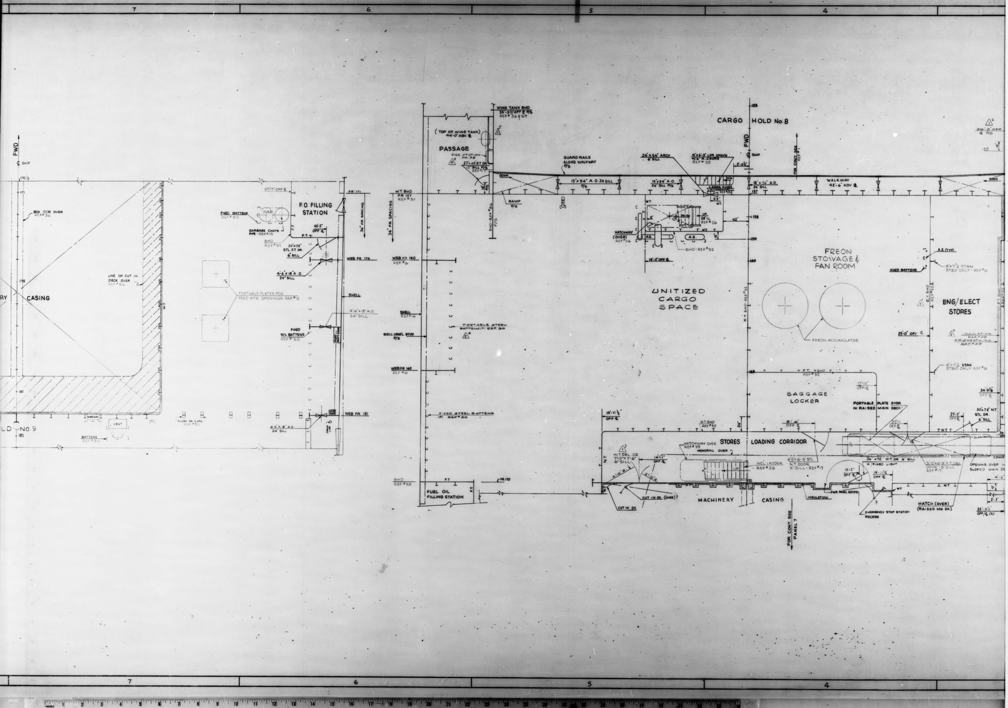
360 SQ. FT

BUILDERS PLAN NO. H-4650-111-10-21

10X

FRAME 1 OF 4

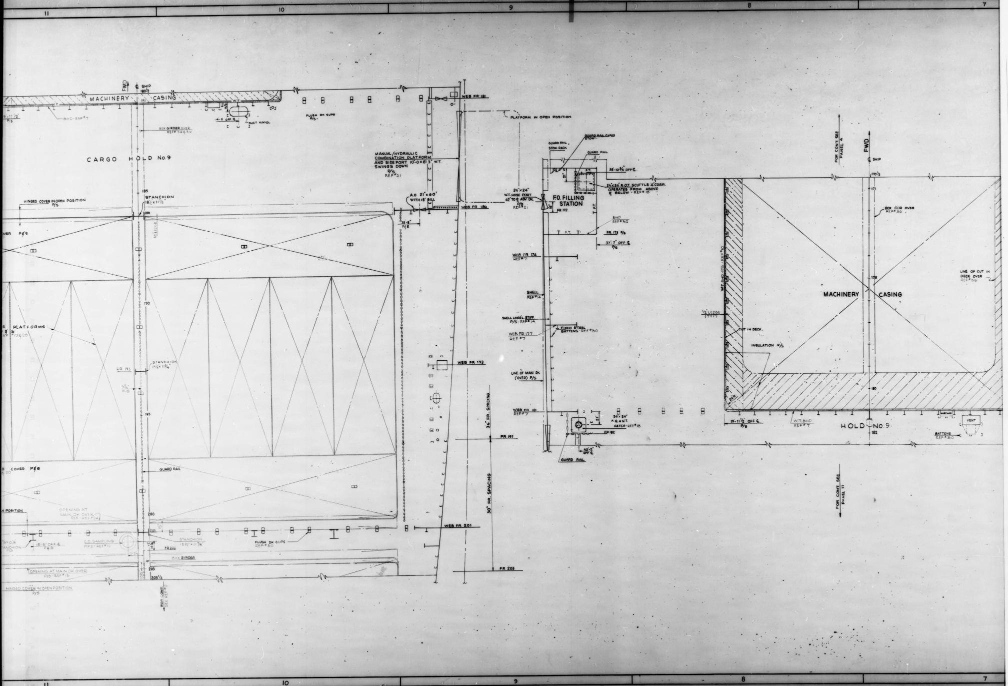
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


7
6
5
4
CARGO HOLD No. 8
WING TANK BHD 35'-3½" OFF ℄ P/S REF# 36 & 37
(TOP OF WING TANK) 44'-0" ABV ℄
PASSAGE
FIRE STATION NO. 25
27"x 45 GT DR 12" SILL P/S
GUARD RAILS ALONG WALKWAY P/S
24"x 54" ARCH 6" SILL
15"x 54" A.O. 24" SILL P/S
15"x 54" A.O. 24" SILL P/S
15"x 6'-3" LDR OPEN'G W/ 6" R. CRNRS
LADDER RUNGS W/ HANDGRIPS
FWD
℄ SHIP
18"x 54" A.O. 24" SILL
FOR CONT. SEE PANEL 1
WALKWAY 42'-6" ABV ℄
DOWN
RAMP P/S
W.T. BHD FR 157 REF# 31
36" FR SPACING
BHD REF# 36 P/S
HATCHWAY (OVER) REF# 34
UP 28' LL
A.E.
BHD REF# 32
14'-2" OFF ℄
UNITIZED CARGO SPACE
FREON STOWAGE & FAN ROOM
FREON ACCUMULATOR
A.E. (TYP)
6"x 7" L STAN STBD ONLY REF# 6
FIXED BATTENS
C.T. BHD REF# 32
ENG/ELECT STORES
25'-0" OFF ℄
INSULATION REF# 28
34-9/8 OFF ℄
BAGGAGE LOCKER
T.T. BHD REF# 32
17'-10" OFF ℄
PORTABLE PLATE OVER IN RAISED MAIN DECK
30"x 72" N.T. STL DR 6" SILL
T.N.T.
N.T. BHD REF# 32
19'-11½" OFF ℄
STORES LOADING CORRIDOR
HATCHWAY OVER REF# 39
MONORAIL OVER
W.T. DBL DR 7'-0"x 7'-6" 6" SILL
INCL. LADDER REF# 26
4'-0"x 6'-3" STL N.T. DOOR 3" SILL REF# 17
36"x 72" W.T. DR 6" SILL W/ FIXED LIGHT
5'-0"x 6'-3" F.T. DBL DOOR 3" SILL REF# 17
OPENING OVER IN SLOPED MAIN DE
15'-3" OFF ℄
19'-11½" OFF ℄
CUT IN DK
CUT IN DK (OVER)
MACHINERY CASING
INSULATION
PWR PANEL RECESS
EMERGENCY STOP STATION RECESS
HATCH (OVER) (RAISED MN. DK.)
35'-4½" OFF/℄
FOR CONT. SEE PANEL 7
FR 170
FUEL OIL FILLING STATION
BHD REF# 33
FIXED STEEL BATTENS (P) REF# 30
PORTABLE STEEL BATTENS (P) REF# 30
WEB FR 160 REF# 6
SHELL REF# 14
SHELL LONG'L STIFF P/S
WEB FR 165 REF# 6
F.O. FILLING STATION
FR 171
36" FR SPACING
FIXED BATTENS REF# 30
GARBAGE CHUTE PIPE REF# 15
42'-5" OFF ℄
BHD REF# 32
30"x 72" STL F.T. DR 6" SILL
WEB FR 174
4'-6"x 18" A.O. 24" SILL
SHELL
4'-6"x 18" A.O. 24" SILL
FIXED STL BATTENS REF# 30
WEB FR 181
4'-6"x 18" A.O. 24" SILL
PORTABLE PLATES FOR FEED HTR. OPENINGS REF# 12
LINE OF CUT IN DECK OVER REF# 56
BOX GDR OVER REF# 56
CASING
FWD
℄ SHIP
LD No. 9
VENT
FLUSH DK CUPS REF# 50
BATTENS REF# 30
153
158
159
160
165
170
171
175
180
182

BUILDERS PLAN NO. H-4650-111-10-21

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

FRAME 2 OF 4


11
10
9
8
7
FWD
℄ SHIP
180½
MACHINERY CASING
181
W.T.
9'-11½" P/S
BHD · REF# 7
14'-0 OFF ℄
DUCT SPOOL
BOX GIRDER OVER REF# 34 & 36
FLUSH DK CUPS P/S
WEB FR 181
PLATFORM IN OPEN POSITION
CARGO HOLD No. 9
MANUAL/HYDRAULIC COMBINATION PLATFORM AND SIDE PORT 10'-0 X 8'-3" W.T. SWINGS DOWN P/S REF# 21
185
STANCHION 18½ X 11⅞"
186
HINGED COVER IN OPEN POSITION P/S
A.O 21" X 60' WITH 18" SILL
WEB FR 186
38'-9" P/S
½" LEDGE
OVER P/S
PLATFORMS
REF# 19 & 20
190
STANCHION 18⅝ X 11¾"
FR 193
9¾" P/S
195
D COVER P/S
& 20
GUARD RAIL
N POSITION
OPENING AT MAIN DK OVER P/S · REF# 24
200
201
STANCHION 18½" X 11⅞"
15'-3" OFF ℄ P&S
STANCHION P/S
C.O. SAMPLING PIPE · REF# 16
FR 202
BOX GIRDER
OPENING AT MAIN DK OVER P/S · REF# 15
203
203½
HINGED COVER IN OPEN POSITION P/S
FOR CONT. SEE REF# 2
FLUSH DK CUPS REF# 30
WEB FR 193
WEB FR 201
36" FR. SPACING
FR 197
30" FR. SPACING
FR 203
GUARD RAIL STOW. RACK
GUARD RAIL CHAIN STOW
GUARD RAIL
F.T.
21"
38'-10¾" OFF ℄
24"X24" R.O.T. SCUTTLE 4" COAM. OPERATES FROM ABOVE & BELOW · REF# 18
24" X 24" W.T. HOSE PORT 42" TO ℄ ABV. DK. P/S REF# 21
F.O. FILLING STATION
FR. 172
BHD REF# 32
FR. 173 P/S
37'-7" OFF ℄ P/S
WEB FR 174 REF# 7
SHELL REF# 14
SHELL LONG'L. STIFF. P/S · REF# 14
FIXED STEEL BATTENS · REF# 30
WEB FR 177 REF# 7
LINE OF MAIN DK (OVER) P/S
WEB FR 181 REF# 7
24" X 24" F.O. A.N.T. HATCH · REF# 18
FR 182
40'-2" OFF ℄
GUARD RAIL
FOR CONT. SEE PANEL 4
FWD
℄ SHIP
170½
171
BOX GDR OVER REF# 36
W.T. BHD · P/S · REF# 10
175
MACHINERY CASING
LINE OF CUT IN DECK OVER REF# 36
½" LEDGE (TYP)
CUT IN DECK.
INSULATION P/S
24" R.
180
19'-11½" OFF ℄ P/S
W.T. BHD REF# 7
HOLD No. 9
182
WIREWAY
VENT
BATTENS REF# 30
FOR CONT. SEE PANEL 11

BUILDERS PLAN NO. H-4650-111-10-21

Sep 1980

10X

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

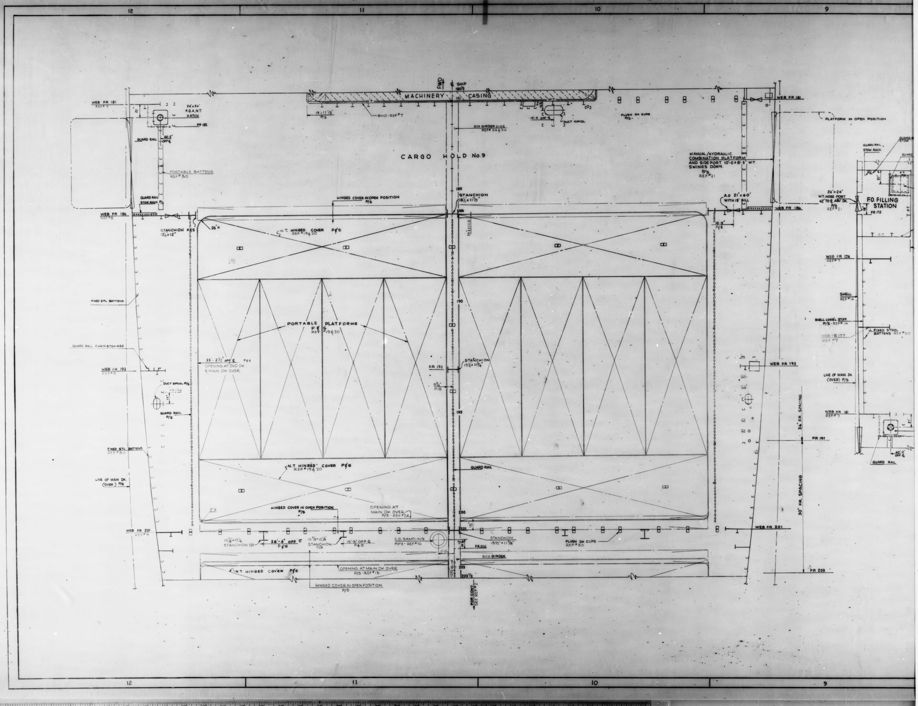
FRAME 3 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

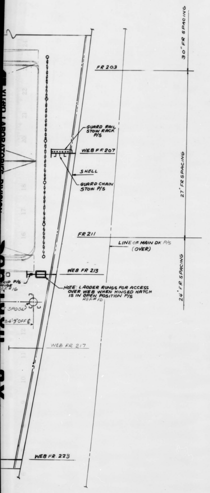
Sep 1980 10X

BUILDERS PLAN NO. H-4650-111-10-21

FRAME 4 OF 4


12
11
10
9
FWD
℄ SHIP 180½
MACHINERY CASING
181
19'-11½" P/S
BHD-REF#7
WEB FR 181 REF#7
24"x24" F.Q.A.N.T. HATCH
FR 182
GUARD RAIL
40-2" OFF ℄
PORTABLE BATTENS REF#30
GUARD RAIL STOW RACK P/S
WEB FR 186 REF#8
STANCHION P/S 12¼x12"
24"R
CARGO HOLD No.9
W.T.
14'-0 OFF ℄
DUCT SPOOL
BOX GIRDER OVER REF# 34&36
FLUSH DK CUPS P/S
185
STANCHION 18½x11⅞"
186
HINGED COVER IN OPEN POSITION P/S
N.T. HINGED COVER P/S REF#19&20
½" LEDGE
MANUAL/HYDRAULIC COMBINATION PLATFORM AND SIDE PORT 10'-0x8'-3" W.T. SWINGS DOWN. P/S REF#21
PLATFORM IN OPEN POSITION
A.O 21"x60" WITH 18" SILL
WEB FR 186
18'-9" P/S
24"x24" W.T. HOSE PORT 42" TO ℄ ABV. DK. P/S REF#21
F.O. FILLING STATION
FR 172
GUARD RAIL STOW RACK
F.T.
WEB FR 174 REF#7
SHELL REF#14
SHELL LONG'L STIFF. P/S-REF#14
WEB FR 177 REF#7
FIXED STEEL BATTENS-REF#30
LINE OF MAIN DK (OVER) P/S
WEB FR 181 REF#7
GUARD RAIL
FIXED STL BATTENS
190
PORTABLE PLATFORMS P/S REF#19&20
35'-2½" OFF ℄ P/S
OPENING AT 2ND DK & MAIN DK OVER
GUARD RAIL CHAIN STOWAGE
WEB FR 193 REF#8
STANCHION 18½x11⅞"
FR 193
P/S
DUCT SPOOL P/S
FR 194
GUARD RAIL P/S
WEB FR 193
195
36" FR. SPACING
FR 197
FIXED STL BATTENS REF#30
LINE OF MAIN DK. (OVER) P/S
GUARD RAIL
N.T. HINGED COVER P/S REF#19&20
30" FR. SPACING
2'R
HINGED COVER IN OPEN POSITION P/S
OPENING AT MAIN DK OVER P/S-REF#24
200
15"
201
WEB FR 201 REF#9
12⅞"x12¼ STANCHION P/S
26'-4" OFF ℄ P/S
10⅜"x10⅛" STANCHION P/S
15'-3" OFF ℄ P/S
C.O. SAMPLING PIPE-REF#16
STANCHION 18½"x11⅞"
FLUSH DK CUPS REF#30
WEB FR 201
FR 202
BOX GIRDER
203
203½
FR 203
N.T. HINGED COVER P/S
OPENING AT MAIN DK OVER P/S-REF#13
HINGED COVER IN OPEN POSITION P/S
FOR CONT. SEE REF#2

3 2 1



GENERAL NOTES:

1. STARBOARD SIDE IS SIMILAR TO OPPOSITE HAND UNLESS OTHERWISE NOTED.
2. ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3. SIZES OF ALL HATCHES, MANHOLES, DOORS, ETC., ARE CLEAR OPENINGS.
4. FOR CUTTING OF ALL ACCESS OPENINGS IN WEB FRAMES, ETC., LOCATION & SIZE TO BE TAKEN FROM STRUCTURAL PLANS.
5. ALL INCLINED LADDERS SHALL BE A MINIMUM OF 28" WIDE INSIDE STRINGERS.
6. ALL VERTICAL LADDERS & LADDER RUNGS WILL BE A MINIMUM 16" WIDE INSIDE OF STRINGERS & RETURNS RESPECTIVELY UNLESS OTHERWISE NOTED.
7. IN THE UNITIZED CARGO HOLD THERE SHALL BE CONTINUOUS 1 1/4" DIA. ROUND BARS WELDED WITHIN 4" OF THE DECK & WITHIN 4" OF THE DECKHEAD AROUND THE PERIPHERY OF EACH LEVEL IN ALL AREAS WHERE UNITIZED CARGO MAY BE CARRIED.

ABBREVIATIONS:

℄ - CENTER LINE
CONT - CONTINUOUS
DIA - DIAMETER
DN - DOWN
ESC - ESCAPE
FR - FRAME
MN - MAIN
NO - NUMBER
P/S - PORT AND STARBOARD
REF - REFERENCE
STAN - STANCHION
STL - STEEL
STOW - STOWAGE

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-27-77	8	1-HAWSER BASKET AND ROPE SCUTTLE FR. 234 PORT LABEL AND REFERENCE ADDED. ALT. TO SUIT G.G. SHARP APPVL LTR. OF JUNE 13, 1977	C.D.S.	J.R.M. 8/3/7
2	7-24-80	7	1-BATTENS AROUND CAPSTAN MACHINERY AND CONTROLLER REVISED	COS	7/24/80 JRM

NO.	PLAN NO.	TITLE
19	222-00-05	ROPE HOPPERS - LAYOUT & DETAILS
18	129-02-25	MAIN DK PLTG & GIRDERS FR 153 1/2 AFT SHT 2
17	129-01-20	TRANSV. SECT. BHDS, FRS & STAN. FR 212 AFT SHT 2
16	232-00-01	VERTICAL LADDERS ABOVE INNERBOTTOM FR 153 AFT
15	129-01-37	CARGO OIL TANK FR 196-205
14	232-00-42	LASHING EYES, BATTENS & WALKWAY - HOLD #9
13	232-00-02	INCLINED LADDERS BELOW MAIN DK FR. 157 AFT
12	231-00-04	GUARD RAILS AROUND HATCHES - AFT FR. 157
11	142-00-03	DETAILS OF HATCH COVERS & PORT. PLATS. HOLD #9
10	142-00-02	ARRGT. OF HATCH COVERS & PORT. PLATS. HOLD #9
9	142-00-01	HATCH AND SCUTTLE LIST
8	141-00-01	DOOR SCHEDULE
7	129-05-04	SHELL EXPANSION - FR. 153 1/2 - AFT
6	129-02-18	2ND DK. PLTG. & GDRS. FR. 153 - AFT SHT 1
5	129-01-35	MISC. BHDS. BELOW MAIN DK. FR. 157 - AFT
4	129-01-19	TRANSV. SECT. BHDS. FR. 212 - AFT - SHT 1
3	129-01-18	TRANSV. SECT. BHDS. FR. 196 - 211
2	111-10-29	GEN. ARRGT. MAIN DK. FR. 203 - AFT
1	H4650-111-10-21	GEN. ARRGT. 2ND DK. FR. 153 1/2 - 203

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 17 MAY 1977
DRAWN C/B - S/T
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-22
ALT. NO. 2

GENERAL ARRANGEMENT 2ND DECK FRS. 203-AFT

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-13-77				
A.B.S.					
U.S.C.G.	6-23-77				
LLOYD'S R.S.					
U.S.P.H.S.	5-24-77				

	DATE OF ISSUE			
ALTERATION	-	-	1	2
ENGINEERING DISTRIBUTION	5-17-7	5-17-7	8-3-7	7-28-0
MAIL: OWNERS	4		2	4
MAIL: AMERICAN BUREAU	3		3	
MAIL: LLOYD'S R.S.				
MAIL: U.S.M.A.				
MAIL: U.S NAVY				
MAIL: U.S.C.G.	3		3	
MAIL: JOINER CONT'R.				
MAIL: USPH	3		3	
INSPECTION: OWNER'S INSP.	1		1	
INSPECTION: AM. BU. INSP.			1	
INSPECTION: LLOYD'S INSP.				
INSPECTION: U.S.M.A. INSP.			1	
INSPECTION: U.S. NAVY INSP.				
INSPECTION: U.S.C.G. INSP.			1	
INSPECTION: COSCHAUB			1	
OFFICE: HULL DRAFT. - 21		1P	1	1
OFFICE: MACH. DRAFT. - 22		1P	2	
OFFICE: ELEC. DRAFT. - 23		1P	1	
OFFICE: OUTFIT. DRAFT. - 25				
OFFICE: ESTIMATING				
OFFICE: 21-1 ENGR.		1P	1	
MISC.: PRODUCTION (BCD)				
MISC.: ORDER DEPT.				
MISC.: JOINER CONT. YARD				
TOTAL ENG'R. DIST.	14	4	21	5
YARD DISTRIBUTION	/	5-17-7	8-9-77	
YARD: UAD-OFFICE			1	
YARD: GEO. EASTBURG			1	
YARD: PIECE RATE - 11			1	
YARD: TEST DEPARTMENT				
YARD: QUALITY ASSURANCE			1	
YARD: PLANNING		1P	7	
STRUCTURAL: GROUND ASSEMBLY			4	
STRUCTURAL: 35 DEPT			2	
STRUCTURAL: P. McNAIR			1	
STRUCTURAL: H. LEVY			1	
STRUCTURAL: NO. WAY				
STRUCTURAL: NO. WAY				
STRUCTURAL: NO. WAY				
STRUCTURAL: NO. WAY				
STRUCTURAL: STRUCT. SUPER.			2	
STRUCTURAL: OPTICAL DETAIL - 45			2	
STRUCTURAL: WET DOCK				
MACH'Y & OUTFIT.: PIPE SHOP - 52			1	
MACH'Y & OUTFIT.: OUTFIT. #1 PIER			1	
MACH'Y & OUTFIT.: PIPE DRAFT. - 52			2	
MACH'Y & OUTFIT.: BOILER SHOP - 58			1	
MACH'Y & OUTFIT.: OUTSIDE MACH. - 60			1	
MACH'Y & OUTFIT.: O-MAT'L			1	
MACH'Y & OUTFIT.: ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.: SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.: COPPER SHOP - 51				
MACH'Y & OUTFIT.: PAINT SHOP - 78			1	
OTHER: WELDING				
OTHER: MOLD LOFT - 41			1	
OTHER: BRACKET SHOP				
TOTAL YARD DIST.	/	4	34	

3 2 1

H-22

22.5 SQ. FT.

SCALED 5/8 3-14-7

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

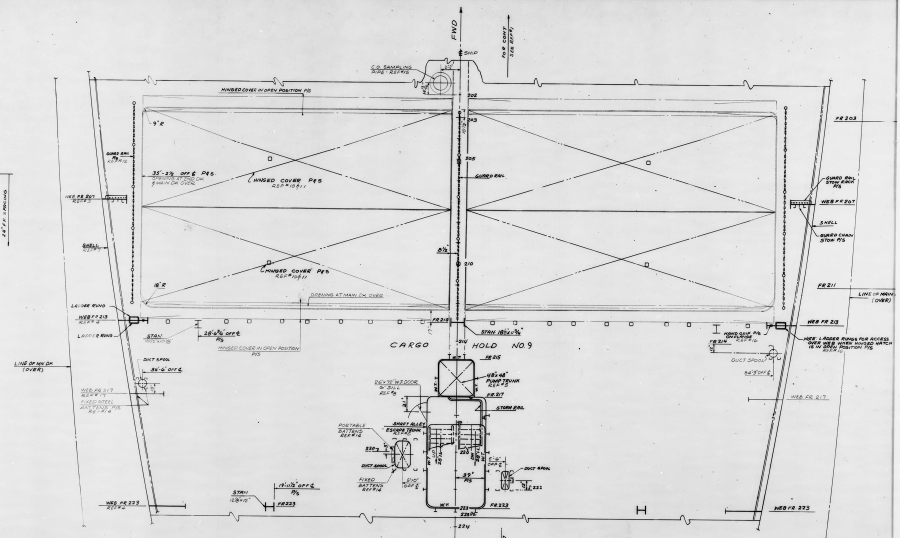
BUILDERS PLAN NO. H-4650-110-10-22

FRAME 1 OF 4

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-22

FRAME 2 OF 4

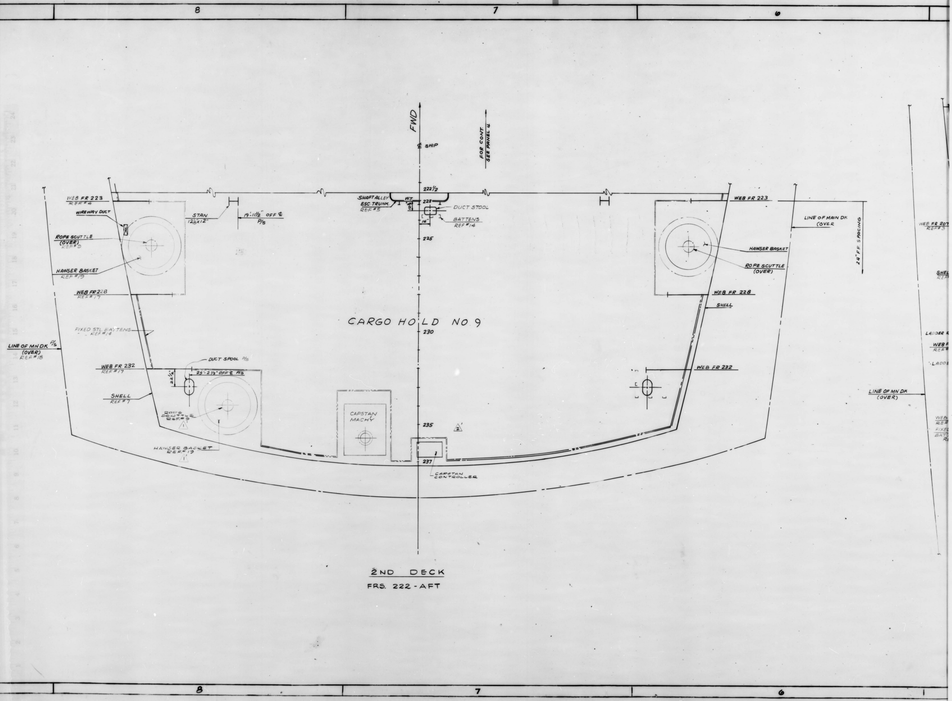

FWD
℄ SHIP
FOR CONT SEE REF#1
C.O. SAMPLING PIPE - REF#15
2'-2"
14 13/16"
202
203
10 1/2"
205
210
HINGED COVER IN OPEN POSITION P/S
9" R
18" R
GUARD RAIL P/S REF#12
35'-2 1/2 OFF ℄ P&S. OPENING AT 2ND DK & MAIN DK OVER
HINGED COVER P&S REF#10&11
HINGED COVER P&S REF#10&11
GUARD RAIL
8 1/2"
OPENING AT MAIN DK OVER
LINE OF MAIN DK COVER
24" F.F. SPACING
WEB FR 207 REF#3
SHELL REF#7
LADDER RUNG
WEB FR 213 REF#4
LADDER RUNG
STAN 10 1/2"x10 1/8"
28'-6 3/4" OFF ℄ P/S
HINGED COVER IN OPEN POSITION P/S
FR 213
17"
STAN. 18 1/8"x11 3/4"
214
CARGO HOLD NO. 9
LINE OF MN DK (OVER)
DUCT SPOOL
34'-6" OFF ℄
18"
WEB FR 217 REF#17
FIXED STEEL BATTENS P/S REF#14
W.T.
FR 215
48"x48" PUMP TRUNK REF#5
26"x72" W.T. DOOR 6" SILL REF#8
21"
FR. 217
STORM RAIL
PORTABLE BATTENS REF#14
SHAFT ALLEY ESCAPE TRUNK REF#5
220
3"
DUCT SPOOL
UP 28" I.L.
DN 28" I.L.
5'-6" OFF ℄
DUCT SPOOL
39" P/S
FIXED BATTENS REF#14
5'-10" OFF ℄
12"
222
STAN 12 1/8"x12"
19'-11 1/2" OFF ℄ P/S
FR 223
WEB FR 223 REF#4
223
223 1/2
FR. 223
224
FOR CONT SEE PANEL 7
FR 203
GUARD RAIL STOW RACK P/S
WEB FR 207
SHELL
GUARD CHAIN STOW. P/S
FR 211
LINE OF MAIN DK (OVER)
WEB FR 213
HAND GRIP P/S ON FLANGE REF#16
FR 214
12"
NOTE: LADDER RUNGS FOR ACCESS OVER WEB WHEN HINGED HATCH IS IN OPEN POSITION P/S REF#16
DUCT SPOOL
34'-9" OFF ℄
WEB FR 217
WEB FR 223

2ND DECK
FRS. 202-222

BUILDERS PLAN NO. H-4650-110-10-22

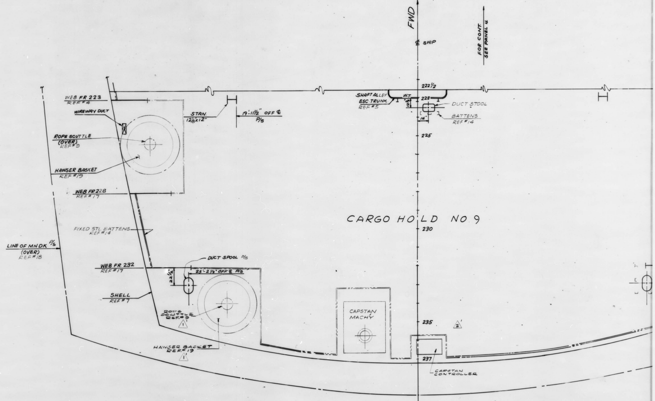
FRAME 3 OF 4

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


8
7
6
FWD
℄ SHIP
FOR CONT.
SEE PANEL 4
222½
228
225
230
235
237
SHAFT ALLEY
ESC. TRUNK.
REF #5
W.T.
12½
DUCT STOOL
14"
BATTENS
REF #14
WEB FR 223
REF #4
WIREWAY DUCT
STAN.
12⅛x12"
19'-11½" OFF ℄
P/S
ROPE SCUTTLE
(OVER)
REF #9
HAWSER BASKET
REF #19
WEB FR 228
REF #17
FIXED STL. BATTENS
REF #14
LINE OF MN DK P/S
(OVER)
REF #18
DUCT SPOOL P/S
WEB FR. 232
REF #17
22½"
25'-2½" OFF ℄ P/S
SHELL
REF #7
ROPE
SCUTTLE
REF #9
1
HAWSER BASKET
REF #19
1
CAPSTAN
MACHY
2
CAPSTAN
CONTROLLER
CARGO HOLD NO 9
WEB FR 223
HAWSER BASKET
ROPE SCUTTLE
(OVER)
WEB FR 228
SHELL
WEB FR 232
LINE OF MAIN DK
(OVER
24" FR. SPACING
LINE OF MN DK
(OVER)
WEB FR 207
REF #3
SHEL
LADDER
WEB F
LADDE
WEB
FIXEL
BAT
8
7
6

2ND DECK

FRS. 222 - AFT


FWD
℄ SHIP
FOR CONT. SEE PANEL 4
222½
223
225
230
235
237
SHAFT ALLEY ESC. TRUNK REF #5
W.T.
12⅝"
14"
DUCT STOOL
BATTENS REF #14
WEB FR 223 REF #4
WIREWAY DUCT
STAN. 12⅛"x12"
19'-11½" OFF ℄ P/S
ROPE SCUTTLE (OVER) REF #9
HAWSER BASKET REF #19
WEB FR 228 REF #17
FIXED STL. BATTENS REF #14
LINE OF MN DK P/S (OVER) REF #18
WEB FR 232 REF #17
DUCT SPOOL P/S
25'-2½" OFF ℄ P/S
22½"
SHELL REF #7
ROPE SCUTTLE REF #9
1'
HAWSER BASKET REF #19
1'
CARGO HOLD NO 9
CAPSTAN MACHY
2'
CAPSTAN CONTROLLER

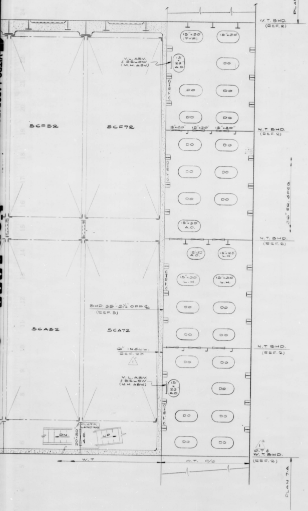
2ND DECK

FRS. 222 - AFT

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-22

FRAME 4 OF 4



GENERAL NOTES

1 - ALL DIMENSIONS ARE THE SAME P/S UNLESS OTHERWISE NOTED.
2 - ALL FORE & AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3 - SIZES OF ALL HATCHES, MANHOLES & DOORS ARE CLEAR OPENINGS.
4 - FOR CUTTING OF ALL ACCESS OPENINGS IN DECKS, BHDS. & GRDS, EXACT LOCATIONS WILL BE TAKEN FROM THE STRUCTURAL PLANS.
5 - ALL VERTICAL LADDERS AND LADDER RUNGS WILL BE MINIMUM 16" WIDE INSIDE OF STRINGERS & RETURNS RESPECTIVELY UNLESS OTHERWISE NOTED.

ABBREVIATIONS

ABV. - ABOVE
A.O. - ACCESS OPENING
A.T. - AIRTIGHT
BEL. - BELOW
E.J. - ERECTION JOINT
MN. DK. - MAIN DECK
N.T. - NONTIGHT
O.T. - OIL TIGHT
BHD - BULKHEAD
V.L. - VERTICAL LADDER
W.T. - WATERTIGHT
℄ - CENTERLINE
MH. - MANHOLE

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-22-77	1,4,7,11,14 4,7,11 1,14	1 - REEFER CARGO HOLD INSULATION REFERENCE ADDED. 2 - ON BHDS. 114.43 (M-43), 125, 141 & 154, W.T. & O.T. PORTIONS INDICATED. 3 - PORTABLE RAILS & STANCHIONS REF. ADDED ABV. ALTS. TO SUIT G.G. SHARP APPVL. LTR. DATED MAY 24 1977	EDS	

			DATE OF ISSUE	
	ALTERATION	-	-	1^3
	ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]
MAIL	OWNERS	4		2
MAIL	AMERICAN BUREAU	3		3
MAIL	LLOYD'S R.S.			
MAIL	U.S.M.A.			
MAIL	U.S. NAVY			
MAIL	U.S.C.G.	3		3
MAIL	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	1		1
INSPECTION	AM. BU. INSP.			1
INSPECTION	LLOYD'S INSP.			
INSPECTION	U.S.M.A. INSP.			1
INSPECTION	U.S. NAVY INSP.			
INSPECTION	U.S.C.G. INSP.			1
INSPECTION	CDS HAUB			1
OFFICE	HULL DRAFT. - 21		[illegible]	1
OFFICE	MACH. DRAFT. - 22		[illegible]	2
OFFICE	ELEC. DRAFT. - 23		[illegible]	1
OFFICE	OUTFIT. DRAFT. - 25			
OFFICE	ESTIMATING			
OFFICE	21-[illegible]		[illegible]	1
MISC.	PRODUCTION (BCD)			
MISC.	ORDER DEPT.			
MISC.	JOINER CONT. YARD			
	TOTAL ENG'R. DIST.	11	4	18
	YARD DISTRIBUTION	/	[illegible]	[illegible]
YARD	MO-OFFICE			1
YARD	[illegible]			1
YARD	PIECE RATE - 11			1
YARD	TEST DEPARTMENT			
YARD	QUALITY ASSURANCE			1
YARD	PLANNING		[illegible]	7
STRUCTURAL	GROUND ASSEMBLY			4
STRUCTURAL	35 DEPT.			2
STRUCTURAL	P. McNAIR			1
STRUCTURAL	H. LEVY			1
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	STRUCT. SUPER.			2
STRUCTURAL	OPTICAL DETAIL - 45			2
STRUCTURAL	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP - 52			1
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			2
MACH'Y & OUTFIT.	BOILER SHOP - 58			1
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			1
MACH'Y & OUTFIT.	Q-MATIC			1
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70			
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74			
MACH'Y & OUTFIT.	COPPER SHOP - 51			
MACH'Y & OUTFIT.	PAINT SHOP - 78			1
OTHER	WELDING			
OTHER	MOLD LOFT - 41			1
OTHER	BRACKET SHOP			
	TOTAL YARD DIST.	/	[illegible]	32

4650-51 ALT. 1^3

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 25 APRIL 1977
DRAWN C/B-S
IN CHARGE
CHECKED
EXAMINED L. L. Mullin
REVIEWED
APPROVED

PLAN NO. H4650-111-10-27 ALT. NO. 1^3

GENERAL ARRANGEMENT 13'-8" FLAT FRS. 114.27-153½ (M-27)

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-24-77				
A.B.S.					
U.S.C.G.	5-23-77				
LLOYD'S R.S.					
U.S.P.H.S.	5-9-77				

NO.	PLAN NO.	TITLE
24	H4650-231-00-03	GUARD RAILS AROUND HATCHES - FWD. FR. 157
23	LATER	CARGO HOLD INSULATION
22	129-01-13	TRANSV. SECT. BHDS. FR. 157-170
21	129-06-30	LAYOUT & DETS. OF DOUBLER PLTS. ON DKS. & FLATS
20	129-02-47	13'-8" FLAT - FR. 125-157
19	129-02-52	13'-8" FLAT - FR. 114.11 (M-11) - 125
18	129-01-07	TRANSV. SECT. BHDS. 114.11 (M-11) - 114.43 (M.43)
17	129-06-08	DETAILS FIXED GUIDES - HOLDS 1, 5 TO 7
16	129-06-07	ARRGT. FIXED GUIDES - HOLDS 1, 5 TO 7
15	232-00-06	VERT. LADDERS ABV. INNERBOTTOM
14	232-00-12	INCL. LADDERS BELOW MAIN DK. - FR. 157 FWD.
13	144-00-01	MANHOLE LIST FWD. FR. 157
12	129-06-05	DETAILS CONVERT. GUIDES - HOLD - 2,3,4 & 8
11	129-06-03	ARRGT. CONVERT. GUIDES - HOLD NO 4 & 8
10	129-05-03	SHELL EXPANSION - FR. 114.43 (M-43) - 153
9	129-05-02	SHELL EXPANSION - FR. 109 - 114.43 (M-43)
8	129-03-24	TRANSV. FLOORS - FR. 110 - 114.43 (M-43)
7	129-03-06	TRANSV. FLOORS - FR. 114.27 (M-27) - 153
6	129-01-44	LONG'L BHDS. ON TANK TOP - FR. 114.43 (M-43) - 153
5	129-01-46	LONG'L BHDS. 35'-3½" OFF ℄ - FR. 109 - 114.43 (M-43)
4	129-01-52	TRANSV. SECT. BHD. FR. 109 - 114.39 (M.39)
3	129-01-12	TRANSV. SECT. BHD. FR. 142-156
2	129-01-10	TRANSV. SECT. BHD. FR. 114.44 (M-44) - 141
1	H4650-111-10-10	GEN. ARRGT. 13'-8" FLAT - FR. 77½ - 114.27 (M-27)

REFERENCE PLANS

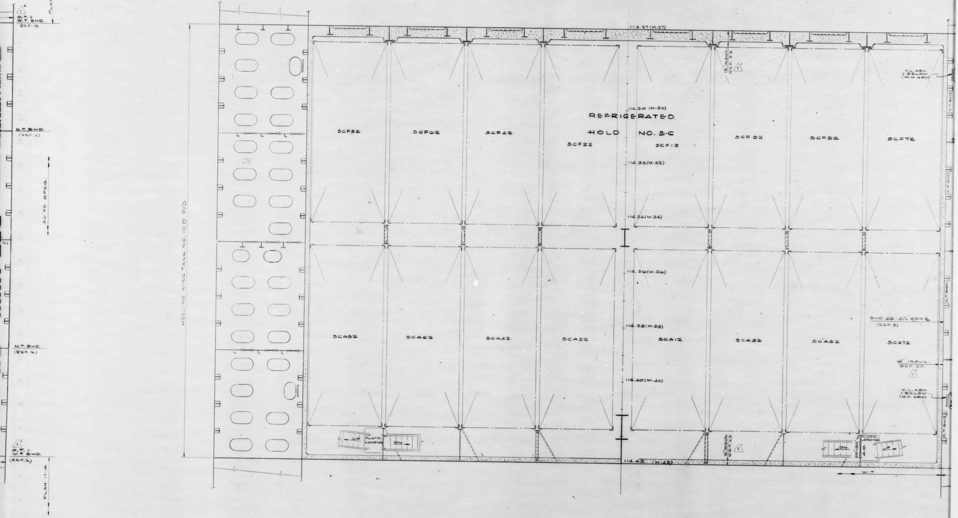
37.5 SQ. FT.

BUILDERS PLAN NO. H-4650-110-10-27

FRAME 1 OF 6

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

~~Sep 1980~~ 8X


5
4
3
O.T. & W.T. BHD.
(REF. 13)
PLAN 4-A
N.T. BHD.
(REF. 2)
36" FR. SPCG.
N.T. BHD.
(REF. 2)
O.T. & W.T. BHD.
(REF. 2)
PLAN 11-A
HEELING WING TANK NO. 10 P/S
114.27 (M-27)
15" INSUL.
REF. 23
114.30 (M-30)
REFRIGERATED
HOLD NO. 5-C
5CF82
5CF62
5CF42
5CF22
5CF12
5CF32
5CF52
5CF72
114.32 (M-32)
114.34 (M-34)
114.36 (M-36)
114.38 (M-38)
114.40 (M-40)
114.43 (M-43)
5CA82
5CA62
5CA42
5CA22
5CA12
5CA32
5CA52
5CA72
V.L. ABV. & BELOW
(M.H. ABV.)
BHD. 35 - 3½" OFF ℄
(REF. 5)
6" INSUL.
REF. 23
V.L. ABV. & BELOW
(M.H. ABV.)
UP
PLAT. LANDING
DN
6" INSUL.
REF. 23
DN
PLAT. LANDING
UP
W.T.
O.T. BHD.

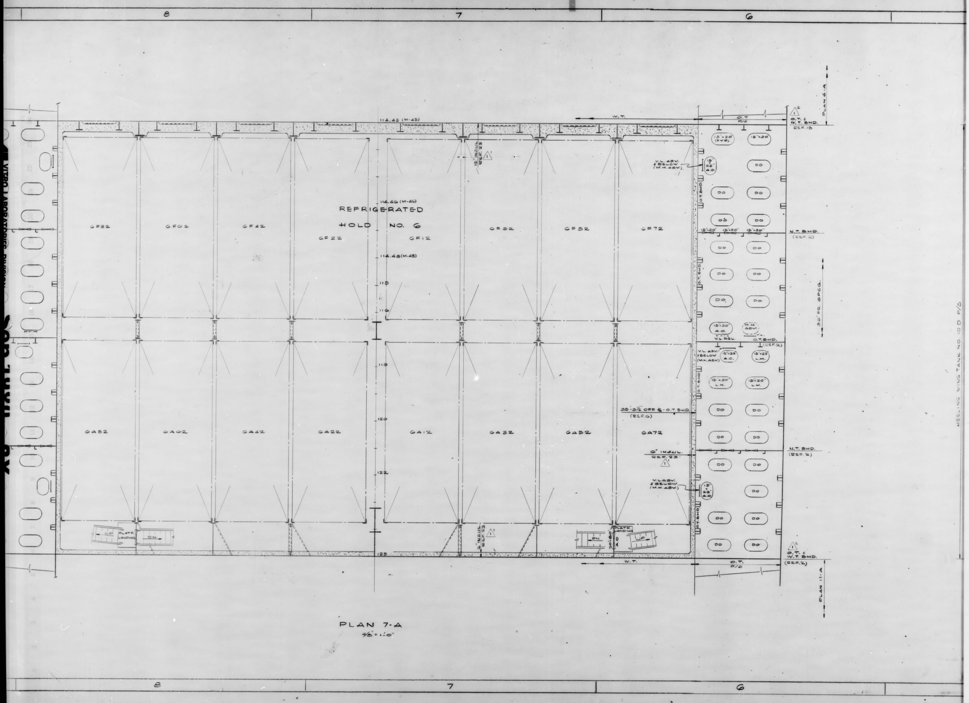
PLAN 4-A
3/8" = 1'-0"

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-110-10-27

FRAME 2 OF 6

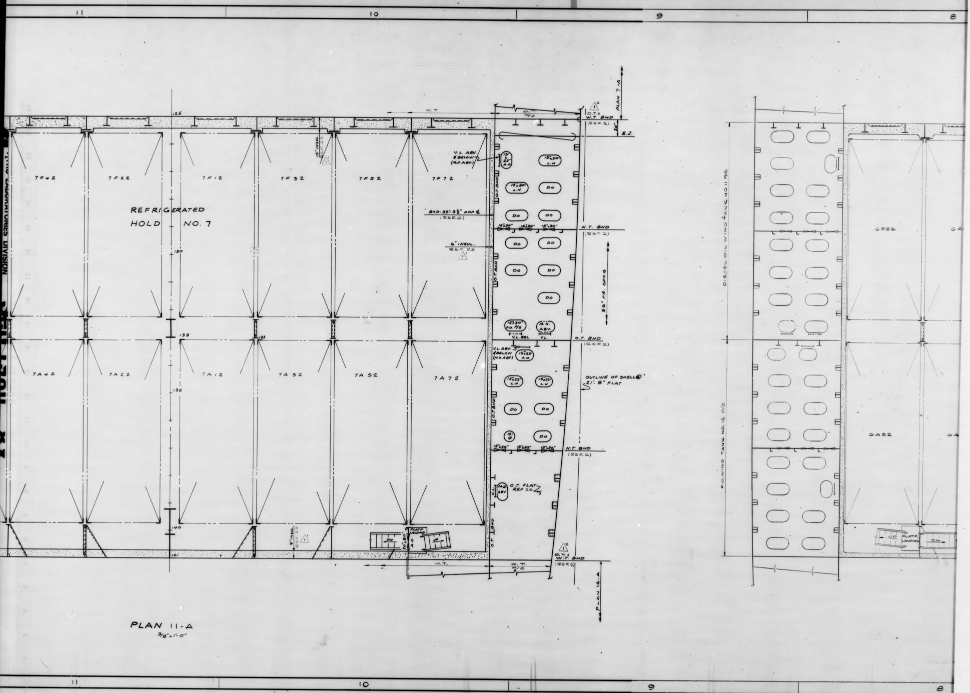

8
7
6
114.43 (M-43)
W.T.
O.T.
P/S
O.T. & W.T. BHD.
REF. 13
PLAN 4-A
13" INSUL REF. 23
REFRIGERATED
HOLD NO. 6
114.46 (M-46)
114.48 (M-48)
115
116
118
120
122
123
GF82
GF62
GF42
GF22
GF12
GF32
GF52
GF72
GA82
GA62
GA42
GA22
GA12
GA32
GA52
GA72
15"×20" (TYP.)
V.L. ABV. & BELOW (M.H. ABV.)
15" 23" A.O.
DO
O.T. BHD.
N.T. BHD.
(REF. 2)
30" FR. SPCG.
M.H. ABV.
V.L. BEL.
15"×23" A.O.
15"×23" L.H.
15"×20" L.H.
33'-3½" OFF ℄ - O.T. BHD. (REF. 6)
6" INSUL. REF. 23
HEELING WING TANK NO. 10 P/S
UP
PLATE LANDING
DN
6" INSUL REF. 23
PLAN 11-A

PLAN 7-A
1/8" = 1'-0"

BUILDERS PLAN NO. H-4650-110-10-27

FRAME 3 OF 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

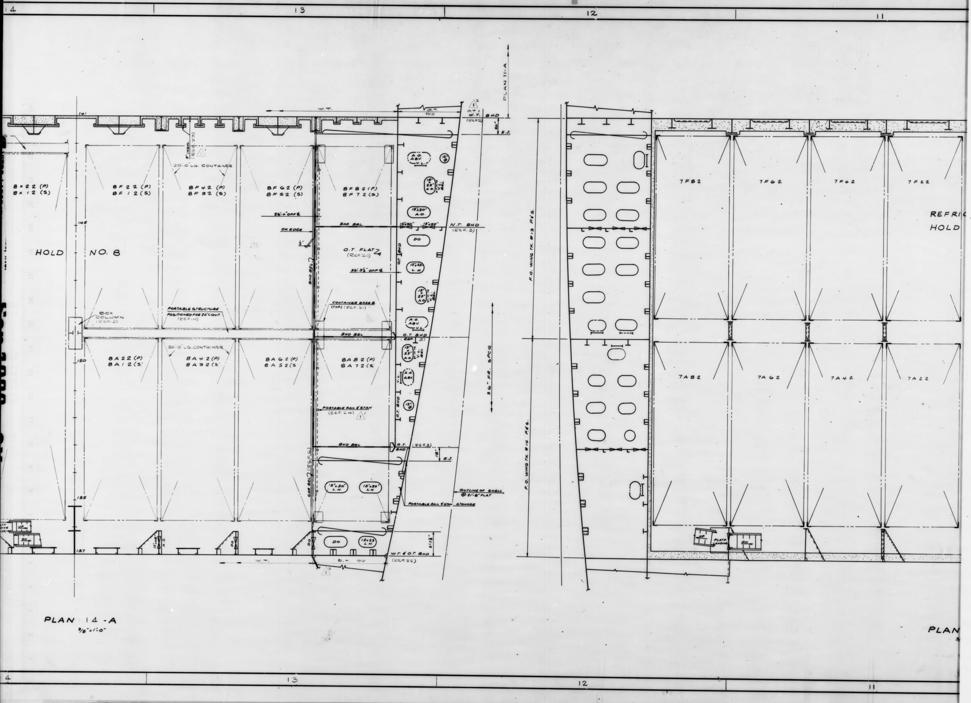

11
10
9
8
7F42
7F22
7F12
7F32
7F52
7F72
REFRIGERATED HOLD NO. 7
7A42
7A22
7A12
7A32
7A52
7A72
125
130
133
135
140
141
18" INSUL. REF. 23
6" INSUL. REF. 23
9" INSUL. REF. 23
BHD-35'-3½" OFF ℄ (REF. 6)
V.L. ABV. & BELOW (M.H. ABV.)
15"x23" A.O.
15"x30" L.H.
DO
O.T. BHD
N.T. BHD (REF. 2)
O.T. BHD (REF. 2)
O.T. & W.T. BHD (REF. 2)
W.T.
O.T. P/S
20"
E.J.
PLAN 7-A
PLAN 14-A
36" FR. SPCG
15"x30" A.O. P/S
M.H. ABV.
V.L. BEL
V.L.
OUTLINE OF SHELL @ 21'-8" FLAT
O.T. FLAT REF 20
15" φ
PLATF. LANDING
DN
UP
DIESEL OIL WING TANK NO 11 P/S
F.O. WING TANK NO. 12 P/S
6F82
6A82

PLAN 11-A
3/8" = 1'-0"

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-27

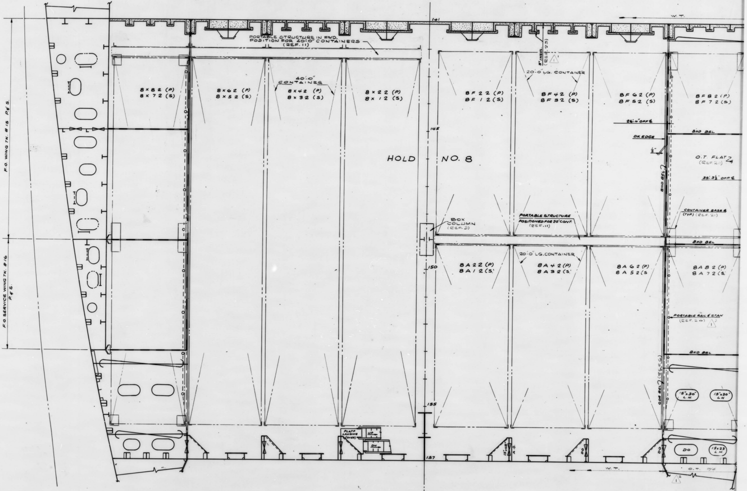
FRAME 4 OF 6


14
13
12
11
PLAN 11-A
W.T.
O.T.
P/S
O.T. & W.T. BHD
(REF.22)
30"
E.J.
3" INSUL. (REF.23)
20'-0" LG. CONTAINER
8×22 (P)
8×12 (S)
8F22 (P)
8F12 (S)
8F42 (P)
8F32 (S)
8F62 (P)
8F52 (S)
8F82 (P)
8F72 (S)
A.O. ABV. V.L.
12" ⊘
15"×23" A.O.
V.L. BEL.
15"×30" A.O.
26'-0" OFF ℄
DK EDGE
BHD BEL
15"×30"
N.T. BHD (REF.3)
HOLD NO. 8
DO
O.T. FLAT (REF.20)
O.T. BHD
15"×23" L.H.
35'-3½" OFF ℄
BHD BEL.
CONTAINER BASE & (TYP.) (REF.21)
BOX COLUMN (REF.9)
PORTABLE STRUCTURE POSITIONED FOR 20' CONT. (REF.11)
BHD BEL
O.T. BHD (REF. 3)
20'-0" LG. CONTAINER
8A22 (P)
8A12 (S)
8A42 (P)
8A32 (S)
8A62 (P)
8A52 (S)
8A82 (P)
8A72 (S)
30" FR. SPCG
PORTABLE RAIL & STAN (REF.24)
BHD BEL
O.T. BHD (REF.3)
18"
E.J.
OUTLINE OF SHELL @ 21'-8" FLAT
15"×30" L.H.
PORTABLE RAIL & STAN. STOWAGE
DO
15×23 L.H.
21'7½"
W.T. & O.T. BHD (REF.22)
W.T.
O.T. P/S
141
145
150
155
157
F.O. WING TK. #13 P&S.
F.O. WING TK. #14 P&S.
7F82
7F62
7F42
7F22
REFRIG HOLD
7A82
7A62
7A42
7A22
UP
PLATF. LANDING
DN
PLAN 14-A
3/8"=1'-0"
PLAN

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-27

FRAME 5 OF 6



15
14
13
PORTABLE STRUCTURE IN FWD. POSITION FOR 40'-0" CONTAINERS (REF. 11)
40'-0" CONTAINER
8×82 (P)
8×72 (S)
8×62 (P)
8×52 (S)
8×42 (P)
8×32 (S)
8×22 (P)
8×12 (S)
141
145
150
155
157
HOLD NO. 8
F.O. WING TK. #15 P&S.
F.O. SERVICE WING TK. #16 P&S.
5" INSUL. (REF. 23)
20'-0" LG. CONTAINER
8F22 (P)
8F12 (S)
8F42 (P)
8F32 (S)
8F62 (P)
8F52 (S)
8F82 (P)
8F72 (S)
W.T.
26'-4" OFF ℄
BHD BEL
DK EDGE
O.T. FLAT (REF. 20)
35'-3½" OFF ℄
BHD BEL
CONTAINER BASE (TYP) (REF. 21)
BOX COLUMN (REF. 3)
PORTABLE STRUCTURE POSITIONED FOR 20' CONT. (REF. 11)
BHD BEL
20'-0" LG. CONTAINER
8A22 (P)
8A12 (S)
8A42 (P)
8A32 (S)
8A62 (P)
8A52 (S)
8A82 (P)
8A72 (S)
PORTABLE RAIL & STAN (REF. 24)
BHD BEL
GDR BEL (REF. 6)
15"×30" L.H.
15"×30" L.H.
PLATF LANDING (OVER)
UP
DN
15"×48" A.O.
DO
DO
DO
15×23 L.H.
W.T.
O.T. P/S

PLAN 14-A

3/8"=1'-0"

15 14 13

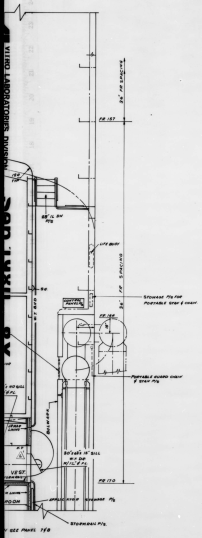
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-27

FRAME 6 OF 6

VITRO LABORATORIES DIVISION

3 2 1



GENERAL NOTES

1. STBD SIDE SIM ¢ OPP OF PORT SIDE UNLESS OTHERWISE NOTED.
2. ALL FWD ¢ AFT DIMENSIONS ARE GIVEN FROM FRAME LINES.
3. SIZES OF ALL DOORS ¢ HATCHES ARE CLEAR OPENINGS.
4. FOR ACCESS OPENINGS IN DECKS, BHDS, ETC. LOCATIONS ¢ SIZES TO BE TAKEN FROM STRUCTURAL PLANS.
5. ROLL UP SHUTTER IN GALLEY TO LINE UP W/ OUTBD RIM OF DRESSER
6. GIVEN SILL HEIGHTS FOR ALL DOORS ARE HEIGHTS ABOVE FINISHED DK. COVERING.
7. ALL HARDWARE TO BE ON DINING RM SIDE ONLY, ON EMERGENCY ESCAPE DR. 35'-8" OFF ℄ (P)
8. ALL HARDWARE FOR DOORS TO STEWARDS SPECIAL LKR. TO BE ON OUTSIDE OF SPACE
9. ALL VERTICAL LADDERS ¢ LADDER RUNGS TO BE A MIN. OF 16" WIDE INSIDE STRINGERS ¢ RETURNS, RESPECTIVELY, UNLESS OTHERWISE NOTED.

ABBREVIATIONS

ABV	- ABOVE	LT	- LIGHT
A.B.L.	ABOVE BASELINE		
A.T.M.H.B.P.	AIRTIGHT MANHOLE BOLTED PLATE	MACHY	- MACHINERY
BHD	BULKHEAD	MN	- MAIN
℄	- CENTERLINE	N.T.	- NON-TIGHT
C.O.	- CARGO OIL		
COAM	- COAMING	OFF	- OFFICE
DIA	- DIAMETER	P/S	- PORT ¢ STARBOARD
DN	- DOWN	PR	- PAIR
DK	- DECK	RM	- ROOM
DR	- DOOR	RES	- RESERVATION
DEPT	- DEPARTMENT	R.	- RADIUS
D.LT.	- DEAD LIGHT	R.W.T.	- RAISED WATER TIGHT
EA	- EACH	S.M.	- SHEET METAL
DF	- DRINKING FOUNTAIN	STL	- STEEL
		S.S.	- STAINLESS STEEL
F.W.T.	- FLUSH WATER TIGHT	TYP	- TYPICAL
FWD	- FOWARD		
FR	- FRAME	VEST	- VESTIBULE
F.L.	- FIXED LIGHT		
F.T.	- FUME TIGHT		
		W.T.	- WATER TIGHT
G.T.	- GAS TIGHT	W/	- WITH
		ϕ	- ROUND
I.L.	INCLINED LADDER	FWT MH.	- FLUSH WATER TIGHT MANHOLE
JR	- JOINER		
JR MAR BHD.	- JOINER MARINITE BULKHEAD		
GAB	- GENERAL ALARM BELL		
P	- PUSHBUTTON REFRIG. SPACE ALARM		
B	- REFRIGERATED SPACE ALARM BELL		
SG	- SMOKE DETECTION ALARM		
FE	- FIRE EXTINGUISHER		

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	8-4-77	4. 10	1. ELECTRIC PANELS IN GALLEY LOCATED. 2. HATCH COAMING HEIGHT AT FR. 200 CORRECTED. ABV. ALTS. TO SUIT G.G. SHARP APPROVAL LETTER DATED JULY 20, 1977	C.D.S.	J.M. 8/5
2.	7-24-80	3,5 8 7,8 4 4,5 4 10-12 11	1- TRIM IN WAY OF W.T. DOORS ADDED 2- LOCATION OF KICK-OUT PANEL IN BHD. ON FR. 177 - PORT CHGD. 3- SIZE OF FIRE STATIONS CHG'D. 4- STBD BHD. OF STAIRS RELOCATED 5- DOORS IN BHD. 12" FWD FR. 163 RELOCATED. 6- SIZES OF REEFER DOORS REVISED. 7- DECK CRANE FOUNDATION DELETED 8- SAMPLING LINE DAVIT INDICATED.	C.D.S.	7/25/80 J.M.

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 23 JUNE 1977
DRAWN C/B-S
IN CHARGE
CHECKED
EXAMINED J.J. Mullin
REVIEW
APPROVED A. Jackson

PLAN NO. H4650-111-10-28
ALT. NO. 2

GENERAL ARRANGEMENT MAIN DECK FRS. 153½-203

	APPROVAL LETTERS				
HULL	4650-1				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-20-77				
A.B.S.					
U.S.C.G.	8-4-77				
LLOYD'S R.S.					
U.S.P.H.S.	7-6-77				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
25	129-06-32	CONTAINER STOOLS HOLD NO. 9
24	129-06-20	DETS. OF FIXED ¢ REMOV. STRUCT. AT NO. 9 HOLD
23	129-06-17	MISC. DETS. ON DK. CONTR GUIDES AT NO. 9 HOLD
22	129-06-16	ARRGT. OF ON DK. CONTR GUIDES AT NO. 9 HOLD
21		JOINER GEN. ARRGT. MAIN DECK
20	236-00-01	COMMISSARY SPACES ARRGT. MAIN DECK
19	234-00-01	DECK COVERING SCHEDULE
18	232-00-33	MISC. STOWAGE ITEMS
17	232-00-32	STORES CONVEYOR
16	232-00-28	ACCOMMODATION LADDER - ARRGT. ¢ DETS.
15	232-00-02	INCLINED LADDERS BEL. MAIN DK. FR. 157 - AFT
14	222-00-02	MOORING ARRGT. ¢ DETAILS - AFT FR. 157
13	176-00-01	JOINER INSUL. MACH'Y ¢ ACCOMM. SPACES
12	175-00-01	SHIPS STORES REFRIGERATED SPACES
11	161-00-01	PAINTING SCHEDULE
10	145-00-01	WINDOW ¢ FIXED LT. LIST ¢ LOCATIONS
9	141-00-01	DOOR SCHEDULE
8	129-05-06	BULWARKS - FR. 153½ AFT
7	129-04-21	MACH'Y CASING BHDS. MAIN DK. AFT FR. 157
6	129-04-13	ENCL. BHDS. ¢ FASHION PLTS. - MAIN DECK
5	129-04-01	INT. BHDS. ON MAIN DECK AFT
4	129-02-24	MAIN DK. PLTG ¢ GIRDERS - FR. 153½ AFT
3	111-10-29	GEN. ARRGT. MAIN DK. FR. 203 - AFT
2	111-10-26	GEN. ARRGT. MAIN DK. FR 114.27 (M-27) - 153½
1	H4650-111-10-21	GEN. ARRGT. 2ND DK. FR. 153½ - 203

		DATE OF ISSUE											
	ALTERATION	-	-	1	2								
	ENGINEERING DISTRIBUTION	6-21-77	6-24-77	8-11-77	7-18-80								
MAIL	OWNERS	2		2	4								
	AMERICAN BUREAU	3		3									
	LLOYD'S R.S.												
	U.S.M.A.												
	U.S. NAVY												
	U.S.C.G.	3		3									
	JOINER CONT'R.												
	USPH	3		3									
INSPECTION	OWNER'S INSP.	1		1									
	AM. BU. INSP.			1									
	LLOYD'S INSP.												
	U.S.M.A. INSP.			1									
	U.S. NAVY INSP.												
	U.S.C.G. INSP.			1									
	COSCHAUB			1									
OFFICE	HULL DRAFT. - 21		1R	1	1								
	MACH. DRAFT. - 22		2R	2									
	ELEC. DRAFT. - 23		1R	1									
	OUTFIT. DRAFT. - 25												
	ESTIMATING												
	21-1D W/A Wood		1R	1									
MISC.	PRODUCTION (BCD)												
	ORDER DEPT.												
	JOINER CONT. YARD												
	TOTAL ENG'R. DIST.	14	5	21	5								
	YARD DISTRIBUTION	/	6-24-77	8-12-77									
YARD	[redacted] UAB-OFFICE			1									
	GEO. EASTBURG			1									
	PIECE RATE - 11			1									
	TEST DEPARTMENT												
	QUALITY ASSURANCE			1									
	[redacted] PLANNING		4R	1									
STRUCTURAL	GROUND ASSEMBLY			2									
	35 DEPT.			2									
	P. McNAIR			1									
	H. LEVY			1									
	NO. WAY												
	NO. WAY												
	NO. WAY												
	NO. WAY												
	STRUCT. SUPER.			2									
	OPTICAL DETAIL - 45			2									
	WET DOCK												
MACH'Y & OUTFIT.	PIPE SHOP - 52			1									
	OUTFIT. #1 PIER			1									
	PIPE DRAFT. - 52			2									
	BOILER SHOP - 58			1									
	OUTSIDE MACH. - 60			2									
	Q-MAT-L			1									
	ELECTRIC SHOP - 70												
	SHEET MET. SHOP - 74			1									
	COPPER SHOP - 51												
	PAINT SHOP - 78			1									
OTHER	WELDING												
	MOLD LOFT - 41			1									
	BRACKET SHOP												
	TOTAL YARD DIST.	/	4	32									

4650-51-ALT. 1 2

3 2 1

H-28

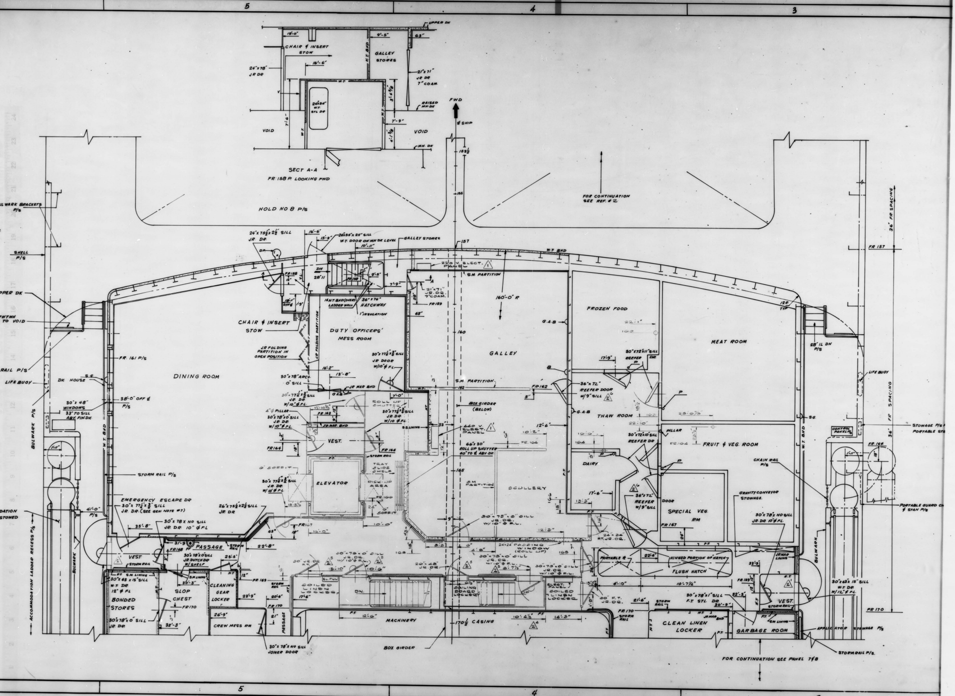
30.0 SQ.FT.

SCHED SUBMT 6-27-7

BUILDERS PLAN NO. H-4650-110-10-28

FRAME 1 OF 5

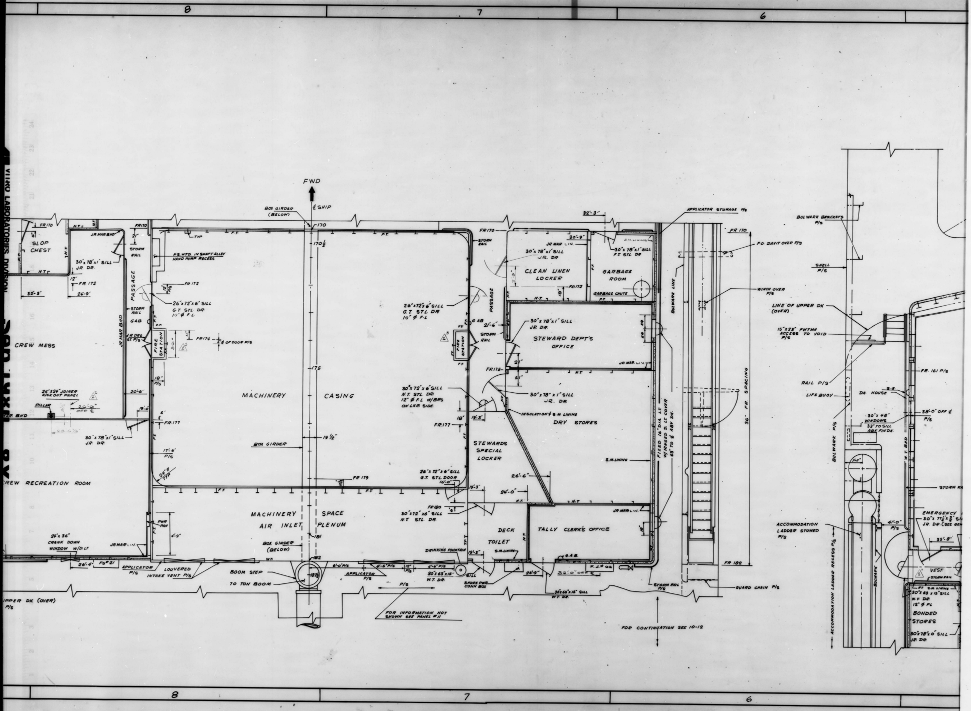
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


SECT A-A
FR. 158 P. LOOKING FWD
CHAIR & INSERT STOW
GALLEY STORES
UPPER DK
MN. DK
RAISED MN. DK
VOID
24"x78" JR DR
21"x71" JR DR 7" COAM.
24"x36" W.T. STL DR
FWD
℄ SHIP
HOLD NO 8 P/S
FOR CONTINUATION SEE REF. #2
BULWARK BRACKETS P/S
SHELL P/S
RAIL P/S
LIFE BUOY
DK. HOUSE
30" x 48" WINDOWS 33" TO SILL ABV FIN. DK.
BULWARK P/S
DINING ROOM
FR. 161 P/S
38'-0" OFF ℄ P/S
W.T. BHD
STORM RAIL P/S
EMERGENCY ESCAPE DR 30" x 77¼" x ¾" SILL JR. DR. (SEE GEN. NOTE #7)
30" x 78 X NO SILL JR. DR 10" ⌀ F.L
26"x75½x2½ SILL JR. DR
ACCOMMODATION LADDER RECESS P/S
BULWARK
41'-0" P/S
35'-8"
VEST.
STORM RAIL
PASSAGE
FR168
30"x78"x0"SILL JR. DUTCH DR W/SHELF
S.M. LINING
30"x63 x 15" SILL W.T. DR. 12" ⌀ FL
BONDED STORES
SLOP CHEST
FR170
CLEANING GEAR LOCKER
CREW MESS RM
PASSAGE
30"x78"x0" SILL JR. DR.
30" x 78" x NO SILL JOINER DOOR
24"x75½x2½ SILL JR. DR.
24"x36"x24" SILL W.T. DOOR ON MN DK LEVEL
GALLEY STORES
FR 158
CHAIR & INSERT STOW
JR FOLDING PARTITION IN OPEN POSITION
JR FOLDING PARTITION
14 N.T. BHD (OVER) LADDER WELL
36" x 74" HATCHWAY
1" INSULATION
DUTY OFFICERS' MESS ROOM
30"x77¼"x¾" SILL JR DOOR W/10" ⌀ F.L.
30"x78" ARCH. 0" SILL
JR MAR BHD
30"x77¼"x¾" SILL JR. DR. W/10" ⌀ F.L.
ROLL UP SHUTTER
4" ⌀ PILLAR
30"x78"x0" SILL JR. DR. W/10" ⌀ F.L.
VEST.
FR164
FR 166
STORM RAIL
ELEVATOR
TRAY SLIDE SHELF
PICK-UP AREA
6" SOFFIT
FR167
FR. 166
220 V ELECT. PANEL
S.M. PARTITION
160'-0" R
FR159
GALLEY
S.M. PARTITION
BOX GIRDER (BELOW)
440 V ELECT. PANEL
66"x30" ROLL UP SHUTTER 60" ℄ ABV. DK.
FR. 162
FR. 164
SCULLERY
S.M. PARTITION
30"x75"x2" SILL JR. DR. W/10" ⌀ F.L.
24x24 PASSING WINDOW (ROLL UP)
26"x48" JR. DR.
30"x78"x0" SILL JR. DR. W/10" ⌀ F.L.
30" JR. DR. F.T.
SOILED LINEN LOCKER
EL. PNL
DN.
SAILING BOARD LOCKER
ELECT. PANEL
SOILED LINEN LOCKER
MACHINERY
170½ CASING
BOX GIRDER
W.T. BHD
FR 157
FROZEN FOOD
G.A.B
30"x72"x11" SILL REEFER DR.
MEAT ROOM
36"x72" REEFER DOOR W/9" SILL
THAW ROOM
30"x72"x11" SILL REEFER DR
PILLAR
FRUIT & VEG. ROOM
DAIRY
36"x72" REEFER W/9" SILL
DOOR
SPECIAL VEG. RM
FR 167
GRAVITY CONVEYOR STOWAGE.
30"x78"x NO SILL JR. DR. 10" ⌀ F.L.
24"x34" RT. JR. DR.
PORTABLE ℄
HINGED PORTION OF HATCH
FLUSH HATCH
30" F.T. JR. DR.
30"x78"x1" SILL F.T. STL. DR.
STORM RAIL
CLEAN LINEN LOCKER
JR MAR BHD
GARBAGE ROOM
VEST.
STORM RAIL
SM LINING
JR MAR LINING
FR. 169
FR 170
28" IL DN P/S
LIFE BUOY
CONTROL PANEL P/S
FR. 166
CHAIN RAIL P/S
BULWARK
30"x63"x 15" SILL W.T. DR. W/12" ⌀ F.L.
PORTABLE GUARD CH & STAN P/S
STOWAGE P/S
PORTABLE STA
36" FR SPACING
APPLICATOR STOWAGE P/S
STORM RAIL P/S.
FOR CONTINUATION SEE PANEL 7 & 8
5
4
3

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-28

FRAME 2 OF 5



8
7
6
FWD
℄ SHIP
BOX GIRDER (BELOW)
SLOP CHEST
CREW MESS
CREW RECREATION ROOM
PASSAGE
STORM RAIL
MACHINERY CASING
MACHINERY SPACE AIR INLET PLENUM
FIRE STATION
CLEAN LINEN LOCKER
GARBAGE ROOM
GARBAGE CHUTE
STEWARD DEPT'S OFFICE
DRY STORES
STEWARDS SPECIAL LOCKER
DECK TOILET
TALLY CLERK'S OFFICE
DRINKING FOUNTAIN
BOOM STEP
70 TON BOOM
LOUVERED INTAKE VENT P/S
APPLICATOR P/S
APPLICATOR STOWAGE P/S
F.O. DAVIT OVER P/S
WINCH OVER P/S
BULWARK LINE
36" FR. SPACING
FIXED 16" DIA LT. W/HINGED D. LT COVER 63" TO ℄ ABV DK.
GUARD CHAIN P/S
STORM RAIL P/S
SHORE PWR CONN BOX
FOR INFORMATION NOT SHOWN SEE PANEL #11
FOR CONTINUATION SEE 10-12
UPPER DK (OVER) P/S
24"x 36" CRANK DOWN WINDOW W/D LT
24"x24" JOINER KICK OUT PANEL
PILLAR
30"x78"x1" SILL JR. DR.
26"x72"x6" SILL G.T. STL. DR 10" Ø F.L.
30"x72"x6" SILL N.T. STL. DR. 12" Ø F.L. W/BRS ON LKR. SIDE
30"x63"x18" W.T. DR.
H.S. W.T.D. IN SHAFT ALLEY HAND PUMP RECESS
INSULATION & S.M. LINING
S.M. LINING
BULWARK BRACKETS P/S
SHELL P/S
LINE OF UPPER DK (OVER)
15"x23" FWTMH ACCESS TO VOID P/S
RAIL P/S
LIFE BUOY
DK. HOUSE
FR. 161 P/S
38'-0" OFF ℄ P/S
30"x 48" WINDOWS 33" TO SILL ABV FIN. DK.
BULWARK P/S
W.T. BHD
STORM RAIL
EMERGENCY
ACCOMMODATION LADDER STOWED P/S
ACCOMMODATION LADDER RECESS P/S
BULWARK
VEST
BONDED STORES
30"x 63 x 15" SILL W.T. DR. 12" Ø FL
30"x78"x 0" SILL JR. DR.
FR 170
FR 172
FR 174
FR 175
FR 177
FR 179
FR 180
FR 182

BUILDERS PLAN NO. H-4650-110-10-28

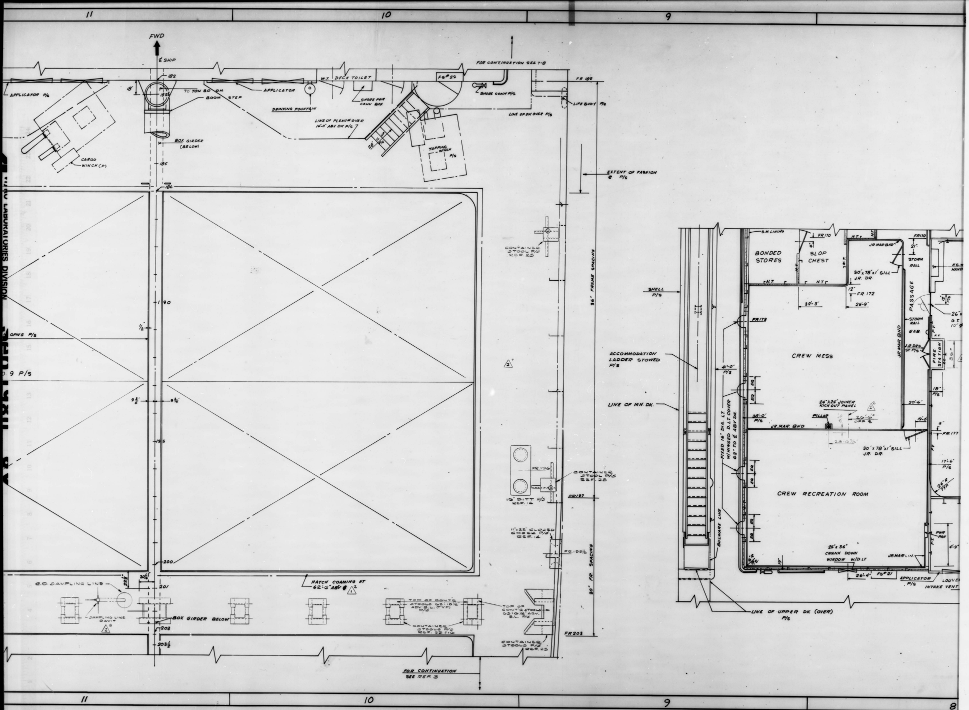
FRAME 3 OF 5

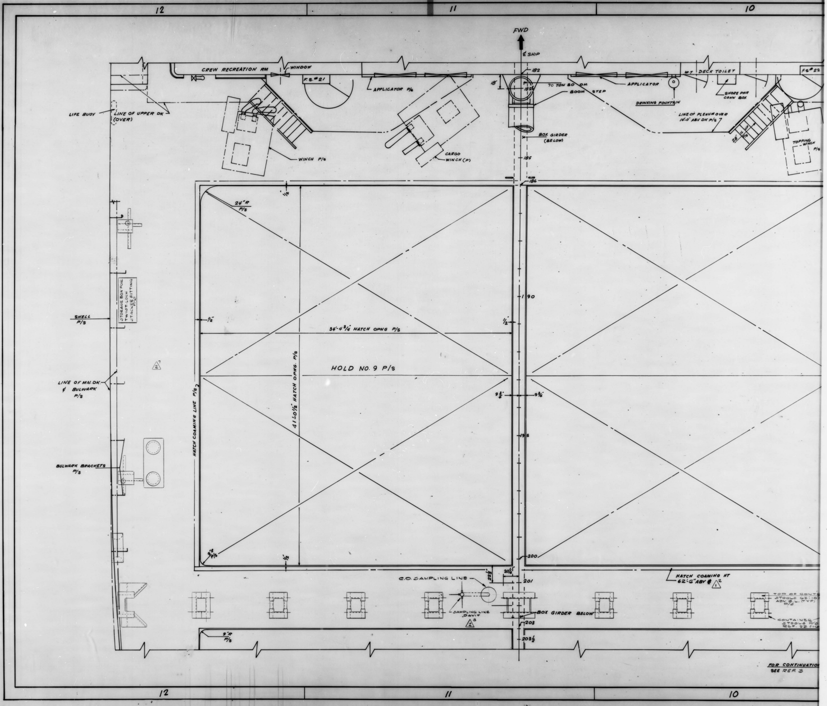
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-28

FRAME 4 OF 5

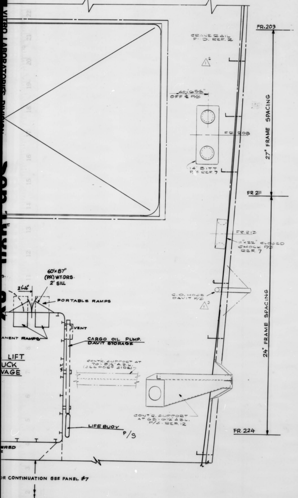

11
10
9
8
FWD
℄ SHIP
182
182½
18"
70 TON BOOM
BOOM STEP
APPLICATOR P/S
APPLICATOR
CARGO WINCH (P)
BOX GIRDER (BELOW)
185
186
W.T. DECK TOILET
SHORE PWR CONN BOX
DRINKING FOUNTAIN
LINE OF PLENUM OVER 14'-0" ABV DK P/S
28" IL UP P/S
TOPPING WINCH P/S
FS#22
FOR CONTINUATION SEE 7-8
SHORE CONN P/S
FR 182
LIFE BUOY P/S
LINE OF DK OVER P/S
EXTENT OF FASHION ℄ P/S
36" FRAME SPACING
30" FR. SPACING
CONTAINER STOOL P/S REF. 25
190
½"
OPNG P/S
.9 P/S
9¾"
9¾"
195
FR.196
FR197
16" BITT P/S REF. 14
11"×22" CLOSED CHOCK P/S REF. 14
FR.199½
200
201
203
203½
20⅛"
22½"
C.O. SAMPLING LINE
SAMPLING LINE DAVIT
BOX GIRDER BELOW
HATCH COAMING HT 62'-6" ABV ℄
TOP OF CONT'R STOOLS 63'-10¼" ABV B.L. (TYP) P/S
CONTAINER STOOLS P/S REF. 22 & 16
TOP OF CONT'R STOOLS 63'-6¼" ABV. B.L. P/S
CONTAINER STOOLS P/S REF. 25
FR203
FOR CONTINUATION SEE REF. 3
SHELL P/S
ACCOMMODATION LADDER STOWED P/S
LINE OF MN. DK.
41'-0" P/S
38'-0" P/S
FIXED 16" DIA. LT. W/HINGED D.LT. COVER 63" TO ℄ ABV DK.
BULWARK LINE
LINE OF UPPER DK (OVER) P/S
S.M. LINING
BONDED STORES
SLOP CHEST
N.T.
FR170
4"
JR. MAR BHD
30"x78"x1" SILL JR. DR.
12"
FR. 172
32'-3"
26'-9"
FR173
EQ
CREW MESS
24"X24" JOINER KICKOUT PANEL
PILLAR
26'-6" OFF ℄
28-6⅞"
JR. MAR. BHD
JR MAR BHD
20'-6"
19'-0"
FR. 177
30"x78"x1" SILL JR. DR.
CREW RECREATION ROOM
24"x36" CRANK DOWN WINDOW W/D.LT.
6"R P/S
19"
JR. MAR. LIN.
26'-4"
FS#21
APPLICATOR P/S
LOUVER INTAKE VENT
FR170
21"
STORM RAIL
PASSAGE
STORM RAIL
GAB.
J.R. DRS. ST. P/S
FIRE STATION
F.T.
36"
12" P/S
26"x G.T. 10"⌀
N.S.W. HAND
18" P/S
5"
17'-6" P/S
24"R TYP
PWR PAN
4'-9"
2
1
8


12
11
10
FWD
℄ SHIP
CREW RECREATION RM
WINDOW
F.S.#21
APPLICATOR P/S
70 TON 80 OM
BOOM STEP
APPLICATOR
W.T. DECK TOILET
FS#22
DRINKING FOUNTAIN
SHORE PWR CONN BOX
LINE OF PLENUM OVER 14'-0" ABV DK P/S
TOPPING WINCH P/S
LIFE BUOY
LINE OF UPPER DK (OVER)
WINCH P/S
CARGO WINCH (P)
BOX GIRDER (BELOW)
182
185
186
190
195
200
201
203
203½
24"R P/S
STORAGE BOX FOR TWIST LOCK STACKER FITTING P/S
SHELL P/S
34'-4¾" HATCH OPNG P/S
41'-0½" HATCH OPNG P/S
HOLD NO. 9 P/S
HATCH COAMING LINE P/S
LINE OF MN. DK & BULWARK P/S
BULWARK BRACKETS P/S
9⅜"
9"R P/S
C.O. SAMPLING LINE
SAMPLING LINE DAVIT
BOX GIRDER BELOW
HATCH COAMING HT 62'-6" ABV ℄
TOP OF CONT STOOLS 63'-10 ABV B.L. (TYP) P/S
CONTAINER STOOLS P/S REF. 23 (10
FOR CONTINUATION SEE REF. 3

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-28

FRAME 5 OF 5


FR. 203
CRANE RAIL F'D. REF. 2
1 2
40'-6 5/8" OFF ℄ P/S
FR. 208
14" BITT P/S REF. 7
27" FRAME SPACING
FR. 211
FR. 213
11"×22" CLOSED CHOCK P/S REF. 7
60"×87" (PR) W.T. DRS. 2" SILL
2'-4"
PORTABLE RAMPS
C.O. HOSE DAVIT P/S
1 3
VENT
ANENT RAMPS
CARGO OIL PUMP. DAVIT STORAGE
LIFT
UCK
VAGE
CONT'R. SUPPORT AT 70'-3 1/2" A.B.L. (SEE PORT SIDE)
W.T.
24" FRAME SPACING
CONT'R. SUPPORT AT 63'-6 1/4" A.B.L. P/S - REF. 12
LIFE BUOY P/S
FR. 224
RRED
OR CONTINUATION SEE PANEL #7

NOTE:
SEE DWG H4650-111-10-28 FOR GENERAL NOTES & ABBREVIATIONS.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.		4	1-DOOR TO M/G ROOM RELOCATED.		
		3,5	2-CRANE RAIL FDN. DELETED.		
		3,5	3-C.O. HOSE DAVIT ADDED AT FR. 216 P/S.		
		7	4-CAPSTAN RELOCATED, CAPSTAN CONTROL ADDED.		
	7-26-80	6,8	5-CLOSED CHOCK FR. 237 P&S RELOCATED.	COS	7/25/80 J.M.

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 23 JUNE 1977
DRAWN C/B-S
INCHARGE
CHECKED
EXAMINED T. L. Mellin
REVIEW
APPROVED

PLAN NO. H4650-111-10-29
ALT. NO. 1S

GENERAL ARRANGEMENT MAIN DECK FRS. 203-AFT

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-20-77				
A.B.S.					
U.S.C.G.	8-4-77				
LLOYD'S R.S.					
U.S.P.H.S.	7-6-77				

NO.	PLAN NO.	TITLE
12	129-06-32	CONTAINER STOOLS HOLD NO. 9
11	129-06-16	ARRGT. ON DK. CONT'R GUIDES AT NO. 9 HOLD
10	129-06-20	DETS. OF FIXED & REMOV. STRUCT. AT NO. 9 HOLD
9	232-00-02	INCL. LADDERS BELOW MAIN DK. 157 AFT
8	231-00-05	ARRGT. & DETAILS-STORM RAILS-EXTERIOR
7	222-00-02	MOORING ARRGT. & DETS. AFT FR. 157
6	161-00-01	PAINTING SCHEDULE
5	141-00-01	DOOR SCHEDULE
4	129-05-06	BULWARKS-FR. 153½-AFT
3	129-04-19	ENCL. BHDS. AFT DECK HOUSE
2	129-02-24	MAIN DECK PLTG & GIRDERS-FR. 153½-AFT
1	H4650-111-10-28	GEN. ARRGT. MAIN DECK-FR 153½-203

REFERENCE PLANS

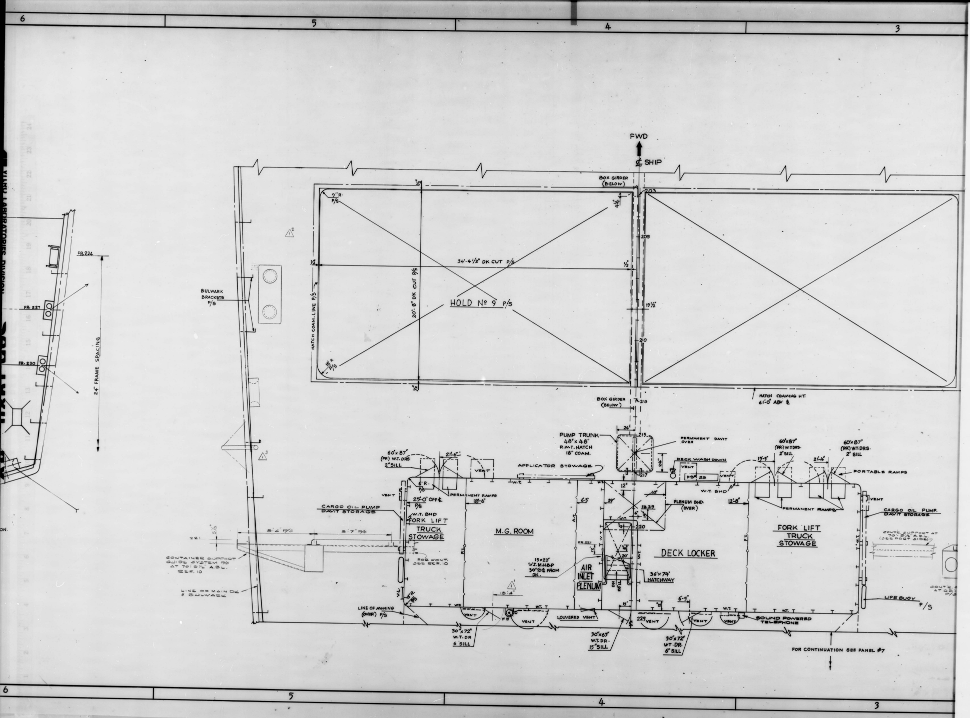
		DATE OF ISSUE			
	ALTERATION	—	—	—	1S
	ENGINEERING DISTRIBUTION	6/24/77	6/28/77	8/10/77	7/28/80
MAIL	OWNERS	4			4
MAIL	AMERICAN BUREAU	3			
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U.S. NAVY				
MAIL	U.S.C.G.	3			
MAIL	JOINER CONT'R.				
MAIL	USPH	3			
INSPECTION	OWNER'S INSP.	1		1	
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.			1	
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CDSchnaue			1	
OFFICE	HULL DRAFT.-21		1P	1	1
OFFICE	MACH. DRAFT.-22		2R	2	
OFFICE	ELEC. DRAFT.-23		1P	1	
OFFICE	OUTFIT. DRAFT.-25				
OFFICE	ESTIMATING				
OFFICE	21-TD [illegible]		1P	1	
MISC.	PRODUCTION (BCD)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	14	5	10	5
	YARD DISTRIBUTION	/	6/24/7		
YARD	GPM				
YARD	PIECE RATE-11				
YARD	TEST DEPARTMENT				
YARD	ENGR. PLANNING		14		
STRUCTURAL	GROUND ASSEMBLY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.				
STRUCTURAL	OPTICAL DETAIL-45				
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP-52				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER				
MACH'Y & OUTFIT.	PIPE DRAFT.-52				
MACH'Y & OUTFIT.	BOILER SHOP-58				
MACH'Y & OUTFIT.	OUTSIDE MACH.-60				
MACH'Y & OUTFIT.	ELECTRIC SHOP-70				
MACH'Y & OUTFIT.	SHEET MET. SHOP-74				
MACH'Y & OUTFIT.	COPPER SHOP-51				
MACH'Y & OUTFIT.	PAINT SHOP-75				
OTHER	WELDING				
OTHER	MOLD LOFT-41				
OTHER	BRACKET SHOP				
	TOTAL YARD DIST.	14			

21.3 S.L.FT.

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-29

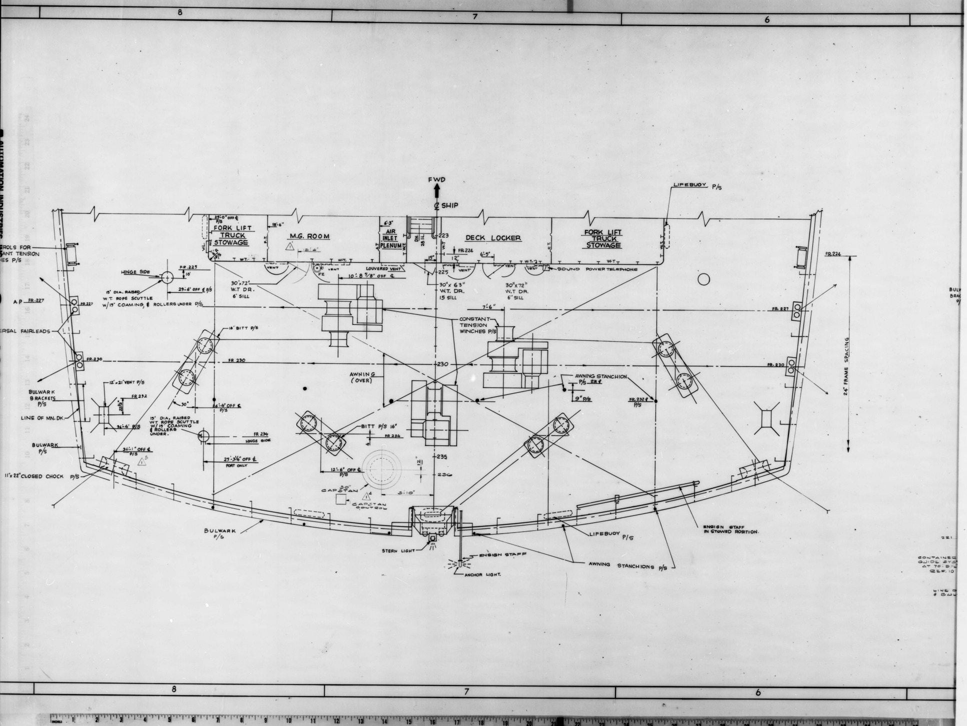
FRAME 1 OF 4


6
5
4
3
FWD
℄ SHIP
BOX GIRDER (BELOW)
203
205
210
213
215
217
220
221
224
227
230
7" R P/S
4½"
½"
18" R P/S
34'-4½" DK CUT P/S
20'-8" DK CUT P/S
19½"
HATCH COAM. LINE P/S
HOLD Nº 9 P/S
HATCH COAMING HT. 61'-0" ABV ℄
BULWARK BRACKETS P/S
FR. 224
FR. 227
FR. 230
24' FRAME SPACING
PUMP TRUNK 48"×48" R.W.T. HATCH 18" COAM.
24"
PERMANENT DAVIT OVER
DECK WASH DOWN
VENT
FS# 29
APPLICATOR STOWAGE
60×87" (PR) W.T. DRS 2" SILL
21'-6"
21'-4"
15'-5"
12'-8"
6'-5"
18'-6"
15'-4"
VENT
W.T.
W.T. BHD
PORTABLE RAMPS
PERMANENT RAMPS
6' R. P/S
25'-0" OFF ℄ P/S
CARGO OIL PUMP DAVIT STORAGE
FORK LIFT TRUCK STOWAGE
M.G. ROOM
FR. 219
FR. 221
PLENUM BHD. (OVER)
39"
42"
12"
20"
15×25" W.T. M.H.B.P 30"10℄ FROM DK.
AIR INLET PLENUM
36"×74" HATCHWAY
DECK LOCKER
8'-2" P/S
8'-7" P/S
CONTAINER SUPPORT GUIDE SYSTEM P/S AT 70'-9½" ABL REF. 10
FOR CONT. SEE REF. 10
CONT. SUPPORT AT 70'-9½" A.B.L. (SEE PORT SIDE)
LINE OF MAIN DK & BULWARK
LINE OF AWNING (OVER) P/S
LOUVERED VENT
30"×72" W.T. DR. 6" SILL
30"×63" W.T. DR. 15" SILL
SOUND POWERED TELEPHONE
LIFE BUOY P/S
FOR CONTINUATION SEE PANEL #7

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-110-10-29

FRAME 2 OF 4


FWD
℄ SHIP
FORK LIFT TRUCK STOWAGE
M.G. ROOM
AIR INLET PLENUM
DECK LOCKER
FORK LIFT TRUCK STOWAGE
LIFEBUOY P/S
29'-0" OFF ℄ P/S
18'-6"
6'-3"
223
225
FR.224
12"
15"
6'-5"
W.T.
VENT
LOUVERED VENT
SOUND POWER TELEPHONE
10'-8 5/8" OFF ℄
30"x72" W.T. DR. 6" SILL
30"x 63" W.T. DR. 15 SILL
30"x72" W.T. DR. 6" SILL
FR.229
HINGE SIDE
10'
29'-6" OFF ℄ P/S
15' DIA. RAISED W.T. ROPE SCUTTLE W/ 19" COAMING, & ROLLERS UNDER P/S
ROLS FOR ANT TENSION HES P/S
AP FR.227
ERSAL FAIRLEADS
FR.227
7'-6"
CONSTANT TENSION WINCHES P/S
16" BITT P/S
FR.230
FR 230
230
AWNING (OVER)
AWNING STANCHION P/S 231 ℄
9" P/S
FR. 232 ℄ P/S
12"x21" VENT P/S
FR 232
30°
26'-4" OFF ℄ P/S
36'-4" P/S
BULWARK BRACKETS P/S
LINE OF MN. DK.
15' DIA. RAISED W.T. ROPE SCUTTLE W/ 19" COAMING & ROLLERS UNDER.
FR 234 HINGE SIDE
BITT P/S 16"
FR 234
BULWARK P/S
36'-1" OFF ℄ P/S
27'-3 1/4" OFF ℄ PORT ONLY
11"x 22" CLOSED CHOCK P/S
12'-6" OFF ℄ P/S
12"
235
236
30" CAPSTAN
5'-10"
CAPSTAN CONTROL
BULWARK P/S
STERN LIGHT
ENSIGN STAFF
ANCHOR LIGHT.
LIFEBUOY P/S
AWNING STANCHIONS P/S
ENSIGN STAFF IN STOWED POSITION.
FR.224
24" FRAME SPACING
FR. 227
FR. 230
BULV BRAC P/
221
CONTAINER GUIDE SYS AT 70-9% REF. 10
LINE O & BUL
8
7
6

BUILDERS PLAN NO. H-4650-110-10-29

FRAME 3 OF 4

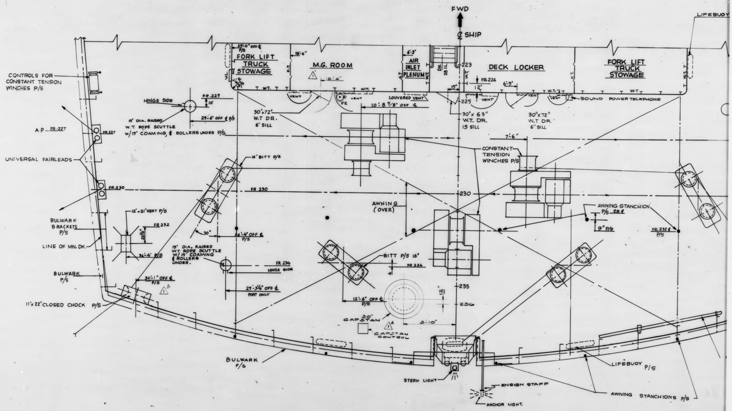
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

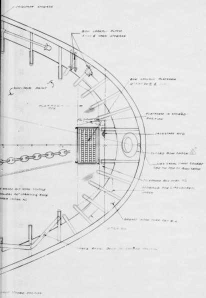
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-110-10-29

FRAME 4 OF 4


8
7
FWD
℄ SHIP
FORK LIFT TRUCK STOWAGE
29'-0" OFF ℄ P/S
18'-6"
M.G. ROOM
1
15'-4"
6'-3"
AIR INLET PLENUM
A.T.
W.T.
DN. 28 I.L.
223
DECK LOCKER
FR.224
12"
15"
6'-5"
F.T.
FORK LIFT TRUCK STOWAGE
LIFEBUOY
W.T.
VENT
FE
LOUVERED VENT
225
SOUND POWER TELEPHONE
30"x72" W.T DR. 6" SILL
10'-8 5/8" OFF ℄
30"x 63" W.T. DR. 15 SILL
30"x72" W.T DR. 6" SILL
CONTROLS FOR CONSTANT TENSION WINCHES P/S
HINGE SIDE
FR.225
10'
15' DIA. RAISED W.T. ROPE SCUTTLE W/19" COAMING, & ROLLERS UNDER P/S
29'-6" OFF ℄ P/S
A.P. FR.227
FR.227
UNIVERSAL FAIRLEADS
16" BITT P/S
CONSTANT TENSION WINCHES P/S
7'-6"
FR.230
FR 230
230
AWNING (OVER)
AWNING STANCHION P/S 231 ℄
9" P/S
FR. 232 ℄ P/S
12"x21" VENT P/S
FR 232
22 1/2"
BULWARK BRACKETS P/S
30°
26'-4" OFF ℄ P/S
LINE OF MN. DK.
36'-4" P/S
15' DIA. RAISED WT ROPE SCUTTLE W/19" COAMING & ROLLERS UNDER.
FR 234
HINGE SIDE
BITT P/S 16"
FR 234
4
BULWARK P/S
36'-1" OFF ℄ P/S
1 5
25'-3 1/4" OFF ℄ PORT ONLY
12'-6" OFF ℄ P/S
235
12"
236
11"x22" CLOSED CHOCK P/S
30" CAPSTAN
1 4
CAPSTAN CONTROL
5'-10"
BULWARK P/S
STERN LIGHT
ENSIGN STAFF
ANCHOR LIGHT.
LIFEBUOY P/S
AWNING STANCHIONS P/S


JACKSTAFF STOWAGE
BOW LOOKOUT PLTFM STAN & CHAIN STOWAGE
BOW LOOKOUT PLATFORM 12" ABV DK @ ℄
NON-SKID PAINT
PLATFORM P/S
PLATFORM IN STOWED POSITION
JACKSTAFF MT'D
CLOSED BOW CHOCK 7
SUEZ CANAL DAVIT SOCKET CRD ON TOP OF BOW CHOCK
TELEPHONE BOX OVER P/S
STOWAGE FOR LIFEJACKETS UNDER
RAISED W.T. ROPE SCUTTLE
ROLLERS 24" COAMING & ROPE
OPER UNDER P/S
BREAST HOOK OVER DET 8-A
STEP P/S
SUEZ CANAL DAVIT IN STOWED POSITION
DAVIT STOWED POSITION

ABBREVIATIONS

STAN	STANCHION
CO	CARGO OIL
STL	STEEL
FS	FIRE STATION
KP	KING POST
F.W.S.	FOG WARNING SPEAKER
MTD	MOUNTED
CRD	CENTERED
IL	INCLINED LADDER
℄	CENTERLINE
DN	DOWN
E.J.	ERECTION JOINT
FOCSLE DECK	FORECASTLE DECK
FR	FRAME
FWD	FORWARD
P/S	PORT & STBD
W.T.	WATER TIGHT
F.P.	FORWARD PERPENDICULAR
GSNK	GOOSENECK
V.L.	VERTICAL LADDER
PLTFM	PLATFORM

GENERAL NOTES

1. SIZES OF ALL DOORS & HATCHES ARE CLEAR OPENINGS
2. ALL STANCHIONS SPACED MAX 5'-0"
3. GIVEN SILL & COAMING HEIGHTS ARE ABOVE FINISHED DECK
4. ALL V.L. TO BE 16" CLEAR INSIDE STRINGERS.

RESERVATIONS

1 ~~1. VENTS FOR BOW THRUSTER MACHY ROOM.~~
2. OPERATING GEAR FOR CHAIN WASHDOWN VALVES.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	9-13-77	3	1. RESERVATIONS 1 AND 2 ADDED TO SUIT G.G. SHARP APPVL. LTR. DATED 8-18-77.	C.D.S.	[illegible]
2	4-25-80	3	1- HAWSE PIPE, BOLSTERS & COVER STOWAGE REVISED	C.D.S.	
		3	2- VENT FOR BOW THRUSTER REVISED.		
		4	3- BULWARK STIFFENERS REVISED.		
		6	4- STANCHION AND CHAIN STOWAGE REVISED		
		6,7	5- RAILS & STANCHIONS AROUND HATCHES REVISED.		
		6	6- CARGO OIL PUMP DAVIT RELOCATED.		
		4	7- BOW CHOCK REVISED.		
		5	8- DEVIL'S CLAW DELETED		
		5	9- RUN OF LINES REVISED.		

	DATE OF ISSUE		
ALTERATION	-	-	1,2
ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]
OWNERS	4		2
AMERICAN BUREAU	3		3
LLOYD'S R.S.			
U.S.M.A.			
U.S. NAVY			
U.S.C.G.	3		3
JOINER CONT'R.			1
USPH	3		3
OWNER'S INSP.	1		
AM. BU. INSP.			1
LLOYD'S INSP.			
U.S.M.A. INSP.			
U.S. NAVY INSP.			
U.S.C.G. INSP.			1
[illegible]			1
HULL DRAFT - 21	[illegible]		1
MACH. DRAFT - 22	[illegible]		2
ELEC. DRAFT - 23	[illegible]		1
OUTFIT DRAFT - 25			
ESTIMATING			
[illegible]	[illegible]		1
PRODUCTION (SCO)			
ORDER DEPT.			
JOINER CONT. YARD			
TOTAL ENG'R. DIST.	[illegible]	[illegible]	[illegible]
YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]
[illegible]			1
[illegible]			1
PIECE RATE - 11			1
TEST DEPARTMENT			
QUALITY ASSURANCE			1
PLANNING	[illegible]		7
GROUND ASSEMBLY			4
[illegible]			2
[illegible]			1
[illegible]			1
NO. WAY			
NO. WAY			
NO. WAY			
NO. WAY			
STRUCT. SUPER.			2
OPTICAL DETAIL - 45			2
WET DOCK			
PIPE SHOP - 52			
OUTFIT. #1 PIER			1
PIPE DRAFT - 52			2
BOILER SHOP - 58			
OUTSIDE MACH. - 60			1
[illegible]			1
ELECTRIC SHOP - 70			
SHEET MET. SHOP - 74			
COPPER SHOP - 51			
PAINT SHOP - 78			1
WELDING			
MOLD LOFT - 41			1
BRACKET SHOP			
TOTAL YARD DIST.	[illegible]	[illegible]	[illegible]

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 14 JULY 1977
DRAWN C/B - S
IN CHARGE
CHECKED
EXAMINED
REVIEWED
APPROVED

PLAN NO. H4650-111-10-30
ALT. NO. 2

GENERAL ARRANGEMENT FOC'SLE DECK

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-18-77				
A.B.S.					
U.S.C.G.	8-29-77				
LLOYD'S R.S.					
U.S.P.H.S.	8-12-77				

NO.	PLAN NO.	TITLE
15	231-00-01	RAILS & STANS. ARRGT. & DETS. FOC'SLE DK.
14	232-00-20	SPARE ANCHOR STOWAGE
13	223-00-02	HAWSE PIPE, CHAIN PIPE & BOLSTERS
12	223-00-01	ANCHOR HANDLING ARRGT.
11	222-00-04	BOW LOOKOUT PLATFORM
10	222-00-01	MOORING ARRGT. & DETAILS - FWD. FR. 157
9	211-00-07	WINCH CONTROL PLATFORM - FWD.
8	211-00-02	KINGPOST & BOOM PEDESTAL - FWD.
7	142-00-01	HATCH & SCUTTLE LIST
6	129-10-07	FDN. CARGO & TOPPING WINCHES & CONT. FWD
5	129-10-06	FDN. ANCHOR WINDLASS, AN. WIN. MACHY. & CH. STOPPER
4	129-04-20	BREAKWATER & BOOBY HATCH
3	129-02-30	HATCH COAM'G. MAIN & FOC'SLE DKS. NO. 1 HOLD
2	129-02-29	FOC'SLE DECK PLATING
1	H4650-111-10-23	GEN. ARRGT. MAIN DK. FR. 45 - FWD.

REFERENCE PLANS

H-30

270 SQ.FT.

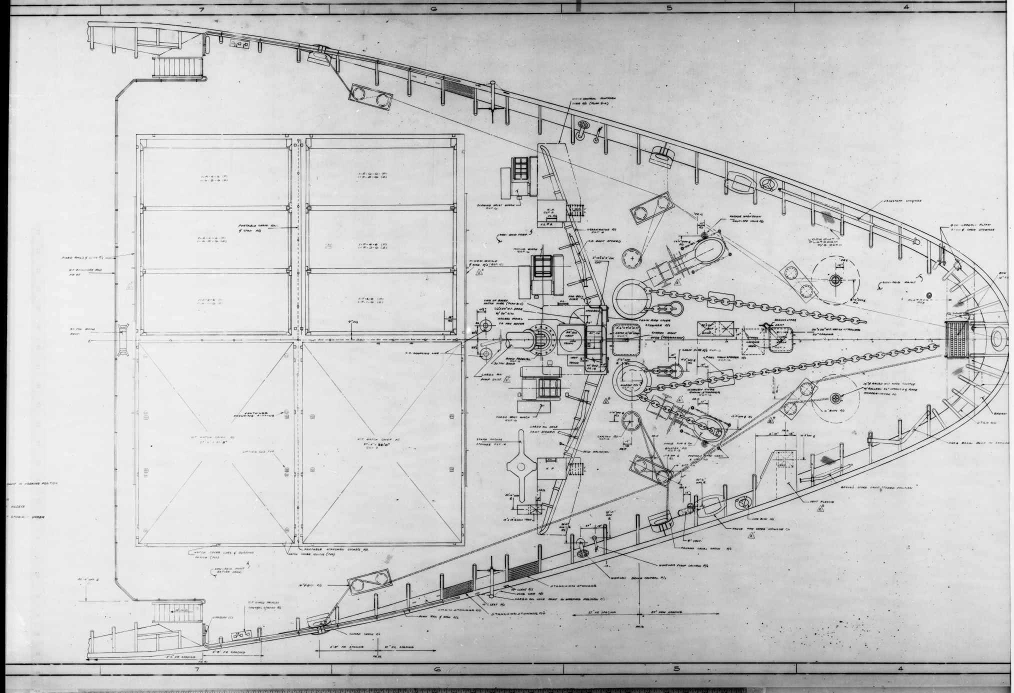
BUILDERS PLAN NO. H-4650- 111-10-30

Sep 1980

10X

FRAME 1 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


7
6
5
4
WINCH CONTROL PLATFORM OVER P/S (PLAN 9-A)
SLEWING HOIST WINCH REF. 6
K. P. REF. 8
V.L. P/S
F.S. # 8
BREAKWATER P/S REF. 4
C.O. DAVIT STOWED
NON-SKID PAINT
TOPPING WINCH REF. 6
2'-10"x6'-3" OK CUT
FIXED RAILS & STAN. P/S (REF. 12)
FOG BELL OVER
LINE OF BOOBY HATCH OVER (PLAN 8-C)
36"x54" W.T. DOOR W/ 24" SILL
ACCESS PANEL TO FAN MOTOR
HANDRAIL
36" DIA VENT
TRUNK
24" DN
VENT TRUNK
W.T. BHD FR. 18
BOOM PEDESTAL REF. 8
30 TON BOOM
CARGO OIL PUMP DAVIT.
CARGO HOIST WINCH REF. 6
CARGO OIL HOSE DAVIT STOWED
SPARE ANCHOR STOWAGE REF. 14
DECK WASHDOWN
12"x18" GSNK VENT
CHAIN PIPE COVER STOWAGE P/S
3'-6"x4'-0" W.T. HATCH W/ 30" COAM. REF. 7
STORES DAVIT OVER (PERMANENT)
ANCHOR WASHDOWN SHUT-OFF VALVE P/S
FR. 12
14'-4" OFF ℄ P/S
26"x36" VENT GOOSENECK
STORES LANDING AREA
BOSUNS STORE DAVIT
BOSUNS STORE HATCH REF. 7
36"x36" W.T. HATCH W/ ROLLERS 30" COAMING
CHAIN PIPE P/S REF. 12
PAWL CHAIN STOPPER P/S REF. 12
WILDCAT P/S REF. 12
MARKEY TYPE CHAIN STOPPER REF. 12
CAPSTAN P/S REF. 10
HAWSE PIPE & OK BOLSTER P/S REF. 12
PORTABLE HAND CHAIN & STAN. P/S
16" BITT P/S
12'-0" OFF ℄ P/S
JACKSTAFF STOWAGE
LOOKOUT PLATFORM P/S REF. 11
BOW LOOKOUT PLTFM STAN & CHAIN STOWAGE
NON-SKID PAINT
PLATFORM P/S
15" Ø RAISED W.T. ROPE SCUTTLE W/ ROLLERS 24" COAMING & ROPE HOPPER UNDER P/S
16" BITTS P/S
BREAST
STEM
SUEZ CANAL DAVIT IN STOWED
BOSUN'S STORE DAVIT STOWED POSITION
VENT PLENUM
LIFE BUOY P/S
HAWSE PIPE COVER STOWAGE P/S
8" VENT.
PANAMA CANAL CHOCK P/S
WINDLASS PUMP CONTROL P/S
WINDLASS BRAKE CONTROL P/S
STANCHION STOWAGE
10" CLEAT P/S
VANG LINE P/S
CARGO OIL HOSE DAVIT IN WORKING POSITION P/S
CHAIN STOWAGE P/S
STANCHION STOWAGE P/S
BLWK RAIL & STAN P/S
27" FR SPACING
24" FRM SPACING
FR 16
1-A-6-6 (P)
1-A-5-6 (S)
1-F-6-6 (P)
1-F-5-6 (S)
PORTABLE CHAIN RAIL & STAN P/S
1-A-4-6 (P)
1-A-3-6 (S)
1-F-4-6 (P)
1-F-3-6 (S)
1-A-2-6 (P)
1-A-1-6 (S)
1-F-2-6 (P)
1-F-1-6 (S)
FIXED RAILS & STAN P/S
W.T. ENCLOSURE BHD FR 45
30 TON BOOM REST.
9" P/S
C.O. SAMPLING LINE
CONTAINER SECURING FITTING
W.T. HATCH COVER P/S 27'-4" x 21'-3"
LIFTING LUG TYP
W.T. HATCH COVER P/S 27'-4" x 22'-0" REF. 3
HATCH COVER LUGS & DOGGING DEVICE (TYP)
PORTABLE STANCHION SOCKETS P/S
HATCH COVER GUIDES (TYP)
NON-SKID PAINT ENTIRE DECK.
DAVIT IN WORKING POSITION
PADEYE
STOWAGE UNDER
35'-6" OFF ℄
C.T. WINCH PRIFLEX CONTROL STATION P/S
LIFEBUOY P/S
16" Ø BITT P/S
CLOSED CHOCK P/S
2'-8" FR SPACING
27" EQ. SPACING
FR 32
3'-0" FR SPACING
FR 41

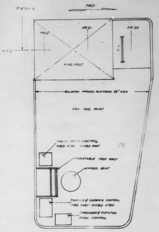
BUILDERS PLAN NO. H-4650- 111-10-30

Sep 1980

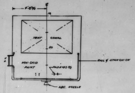
10X

FRAME 2 OF 3

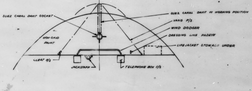
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


FWD
77'-6" OFF ℄
K.P. ℄
FR 22
FR 21
FR 20
KING POST
BULWARK AROUND PLATFORM 42" HIGH
NON-SKID PAINT
CARGO HOIST CONTROL
INB'D STB'D OUTB'D PORT
ADJUSTABLE FOOT REST
WINGED SEAT
TOPPING & SLEWING CONTROL
INB'D PORT - OUTB'D STB'D
SPREADER & ROTATOR
HOOK CONTROL

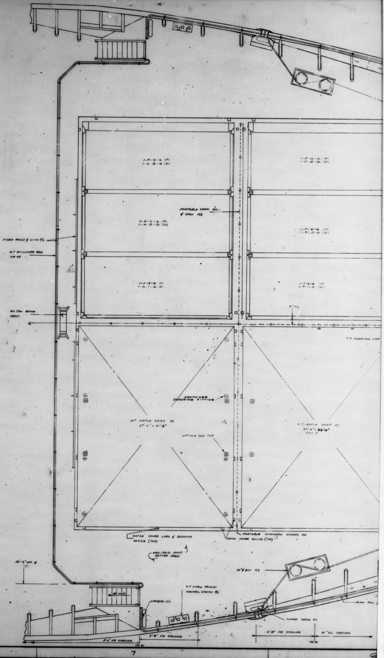
PLAN 9-A
WINCH CONTROL STATION STB'D SHOWN
PORT SIM TO OPP HAND
SCALE 1"=1'-0"


1'-8 5/16
℄
19
20
VENT COWAL
NON-SKID PAINT
PADEYES P/S
RAIL & STANCHION
ABC NOZZLE

PLAN 8-C
TOP OF BOOBY HATCH
SCALE 3/8"=1'-0"


SUEZ CANAL DAVIT SOCKET
SUEZ CANAL DAVIT IN WORKING POSITION
VANG P/S
WIND DODGER
DRESSING LINE PADEYE
LIFEJACKET STOWAGE UNDER
NON-SKID PAINT
CLEAT P/S
JACKSTAFF
TELEPHONE BOX P/S

PLAN 8-A
BREAST HOOK 68'-0" ABV ℄
SCALE 3/8"=1'-0"

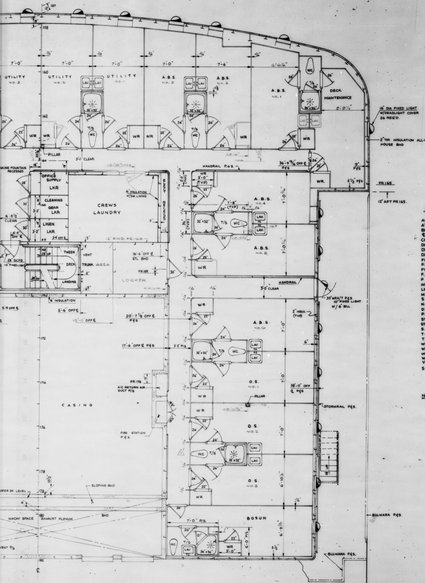

FIXED RAILS & STAN P/S
W.T. ENCLOSURE END FR 45
30 TON BOOM REST
PORTABLE CHAIN RAIL & STAN P/S
1-A-6-6 (P)
1-A-5-6 (S)
1-A-4-6 (P)
1-A-3-6 (S)
1-A-2-6 (P)
1-A-1-6 (S)
1-F-6-6 (P)
1-F-5-6 (S)
1-F-4-6 (P)
1-F-3-6 (S)
1-F-2-6 (P)
1-F-1-6 (S)
C.O. SAMPLING LINE
CONTAINER SECURING FITTING
W.T. HATCH COVER P/S
27'-4" x 21'-3"
LIFTING LUG TYP
HATCH COVER LUGS & DOGGING DEVICE (TYP)
PORTABLE STANCHION SOCKETS P/S
HATCH COVER GUIDES (TYP)
NON-SKID PAINT ENTIRE DECK.
35'-6" OFF ℄ P/S
LIFEBUOY P/S
CONTROL STATION P/S
16"∅ BITT P/S
CLOSED CHOCK P/S
BLWK RAIL
5'-0" FR SPACING
2'-8" FR SPACING
21" EQ. SPACING

BUILDERS PLAN NO. H-4650-111-10-30

FRAME 3 OF 3

Sep 1980 10X

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910



UTILITY NO. 3
UTILITY NO. 2
UTILITY NO. 1
A.B.S. NO. 3
A.B.S. NO. 2
A.B.S. NO. 1
DECK MAINTENANCE
WC
LAV
T/S
WR
16" DIA FIXED LIGHT W/DEADLIGHT COVER 26 REQ'D.
2" THK INSULATION ALL AROUND HOUSE BHD
PILLAR
3'-0" CLEAR
HANDRAIL P&S
DRINKING FOUNTAIN RECESSED
OFFICE SUPPLY LKR
CLEANING GEAR LKR.
LINEN LKR.
CREWS LAUNDRY
4" INSULATION W/SM. LINING
12' FWD. FR. 168
FR 165
12' AFT FR 165.
A.B.S. NO. 4
A.B.S. NO. 5
A.B.S. NO. 6
O.S. NO. 1
O.S. NO. 2
O.S. NO. 3
BOSUN
TWEEN DECK LANDING
VENT TRUNK AREA
16'-6" OFF ℄ STL. BHD
LOCKER
FR 169
HANDRAIL
3'-0" CLEAR
30" WEA/T P&S 10" FIXED LIGHT W/ 6" SILL.
2" INSUL (TYP)
6" INSULATION
5'-6" OFF ℄
10'-0" OFF ℄
20'-7 7/8" OFF ℄ P&S
17'-6" OFF ℄ P&S
CASING
FR. 174
A/C RETURN AIR DUCT P/S
FIRE STATION P&S
PILLAR
38'-0" OFF ℄
STORMRAIL P&S.
SLOPING BHD
UPPER DK. LEVEL
MACHY SPACE EXHAUST PLENUM
BHD
VENT P/S
BULWARK P&S.
BULWARK P&S.
7'-0" P/S
160
162
172
174
176
178
182

ABBREVIATIONS & NOTES

ABV	ABOVE
AT	AIR TIGHT.
BHD	BULKHEAD.
℄	CENTER LINE
COAM	COAMING.
DIA	DIAMETER
DK	DECK
DR	DOOR
FD	FIRE DOOR
F.T.	FUME TIGHT
FWD	FORWARD
F.T.G.T.	FUME TIGHT GAS TIGHT
F	FIXED
INSUL	INSULATION
LKR	LOCKER
M.J.D.	METAL JOINER DOOR
S.M	SHEET METAL
N.T.	NON TIGHT
DN	DOWN
P&S	PORT & STARBOARD
STAN	STANCHION
STL DR	STEEL DOOR
S.R	STATE ROOM
TC	TOILET CABINET
T/S	TOILET & SHOWER
WEA/T	WEATHER TIGHT
WT	WATER TIGHT
WR	WARDROBE
WC	WATER CLOSET
VL	VERTICAL LADDER
S.C.F.D.	SELF CLOSING FIRE DOOR

UPPER DECK 8'-9" ABOVE MAIN DECK

NOTES:-

1/ ALL DOORS ARE MJD UNLESS OTHERWISE NOTED.
2/ DIMENSIONS FOR DOORS ARE CLEAR OPENINGS REQUIRED.
3/ SHOWERS TO HAVE GLASS FIBER REINFORCED DOORS.
4/ ALL INCLINED LADDERS ON WEATHER DECKS SHALL HAVE A MIN CLEAR WIDTH OF 24"
5/ CENTER OF FIXED LIGHTS TO BE 5'-3" ABOVE FINISHED DECK.

7/ STBD SIDE DETAILED - PORT SIDE SIM & OPP HAND EXCEPT WHERE NOTED.
8/ ALL V.L. TO BE 16" CLEAR INSIDE STRINGERS.

RESERVATIONS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	7-24-80	2, 3	1 - JOINER BHD. THICKNESS CHANGED FROM 7/8" TO 3/4" 2 - ENCLOSURE FOR ELEVATOR DOOR OPERATOR ADDED IN LOCKER.	C.D.S.	[illegible] T.R.M.

REFERENCE PLANS

NO.	PLAN NO.	TITLE
9		JOINER GEN. ARRGT. UPPER DECK
8	234-00-01	DECK COVERING SCHEDULE
7	232-00-03	INCL. LADDERS - ABOVE MAIN DECK
6	231-00-05	ARRGT. & DETAILS STORM RAILS - EXTERIOR
5	161-00-01	PAINTING SCHEDULE
4	143-00-01	WINDOWS & FIXED LTS. LIST & LOCATIONS
3	129-04-14	ENCL. BHDS & FASHION PLTS. UPPER DK.
2	129-04-07	UPPER DECK PLTG & GIRDERS
1	H4650-129-04-02	INTERIOR BHDS. UPPER DECK

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DRAWN C/B - S
CHECKED
REVIEW
DATE 14 JULY 1977
IN CHARGE
EXAMINED T. L. Muller
APPROVED

PLAN NO. H4650-111-10-31
ALT. NO. 1②

GENERAL
ARRANGEMENT
UPPER DECK
AND TOP OF DECK HOUSE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-18-77				
A.B.S.					
U.S.C.G.	8-29-77				
LLOYD'S R.S.					
U.S.P.H.S.	8-12-77				

H-31

		DATE OF ISSUE
	ALTERATION	— — — 1②
	ENGINEERING DISTRIBUTION	[illegible]
MAIL	OWNERS	
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S. NAVY	
	U.S.C.G.	
	JOINER CONT'R.	
	USPH	
INSPECTION	OWNER'S INSP.	
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
	CO SCHAUB	
OFFICE	HULL DRAFT. - 21	
	MACH. DRAFT. - 22	
	ELEC. DRAFT. - 23	
	OUTFIT DRAFT. - 25	
	ESTIMATING	
	21-10 WARDING	
MISC.	PRODUCTION (BCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	
	YARD DISTRIBUTION	
YARD	HBD OFFICE	
	GEO. [illegible]	
	PIECE RATE - 11	
	TEST DEPARTMENT	
	QUALITY ASSURANCE	
	PLANNING	
STRUCTURAL	GROUND ASSEMBLY	
	35 DEPT	
	P. MCNAIR	
	H. LEVY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL - 48	
	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP - 52	
	OUTFIT. #1 PIER	
	PIPE DRAFT. - 52	
	BOILER SHOP - 58	
	OUTSIDE MACH. - 60	
	[illegible]	
	ELECTRIC SHOP - 70	
	SHEET MET. SHOP - 74	
	COPPER SHOP - 51	
	PAINT SHOP - 78	
OTHER	WELDING	
	MOLD LOFT - 41	
	BRACKET SHOP	
	TOTAL YARD DIST.	

4650-51 ALT

255 SQ. FT.

BUILDERS PLAN NO. H-4650- 111-10-31

Sep 1980 10X

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

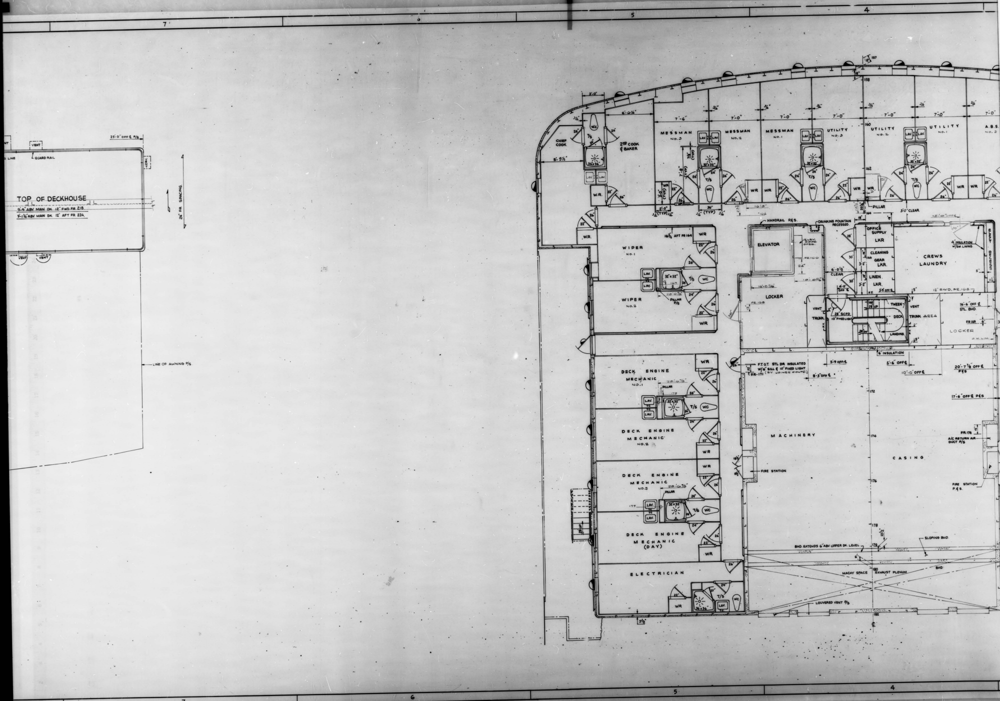
FRAME 1 OF 3

BUILDERS PLAN NO. H-4650- 111-10-31

Sep 1980 10X

FRAME 2 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

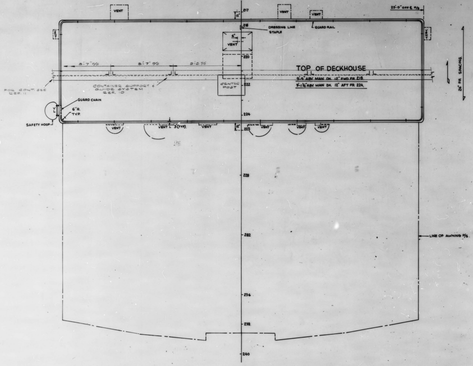

7
6
5
4
TOP OF DECKHOUSE
9'-4" ABV MAIN DK 12" FWD FR 218
9'-1¼" ABV MAIN DK 12" AFT FR 224
25'-0" OFF ℄ P/S
VENT
GUARD RAIL
20" FR SPACING
LINE OF AWNING P/S
CHIEF COOK
2ND COOK & BAKER
MESSMAN NO. 3
MESSMAN NO. 2
MESSMAN NO. 1
UTILITY NO. 3
UTILITY NO. 2
UTILITY NO. 1
A.B.S. NO. 3
LAV.
T/S
WC
WR
W.R.
PILLAR
3'-0" CLEAR
HANDRAIL P&S.
DRINKING FOUNTAIN RECESSED
ELEVATOR
OFFICE SUPPLY LKR
CLEANING GEAR LKR.
LINEN LKR.
CREWS LAUNDRY
4" INSULATION W/SM. LINING
ELECT. RECESS
12" FWD. FR. 168
WIPER NO. 1
WIPER NO. 2
16¾ AFT FR 164
LOCKER
4'-0½" CLEAR
VENT TRUNK
28" SCFD 10" FIXED LIGHT
TWEEN DECK
LANDING
VENT TRUNK AREA
16'-6" OFF ℄ STL. BHD.
FR 169
LOCKER
6" INSULATION
F.T.G.T. STL DR INSULATED W/6" SILL & 10" FIXED LIGHT (BY JOINER CONTR.)
FR-171
5'-9 OFF ℄
5'-6" OFF ℄
8'-3" OFF ℄
10'-0" OFF ℄
20'-7⅞" OFF ℄ P&S
17'-6" OFF ℄ P&S
DECK ENGINE MECHANIC NO. 1
DECK ENGINE MECHANIC NO. 2
DECK ENGINE MECHANIC NO. 3
DECK ENGINE MECHANIC (DAY)
ELECTRICIAN
FIRE STATION
MACHINERY CASING
FR 176
A/C RETURN AIR DUCT P/S
FIRE STATION P&S.
BHD. EXTENDS 6" ABV UPPER DK. LEVEL
SLOPING BHD
MACHY SPACE EXHAUST PLENUM
BHD.
LOUVERED VENT P/S
158
160
162
164
172
174
176
178
180

BUILDERS PLAN NO. H-4650-111-10-31

Sep 1980 TOX

FRAME 3 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910



TOP OF DECKHOUSE

9'-4" ABV MAIN DK. 12" FWD FR 218.

9'-1¼" ABV MAIN DK. 12" AFT FR 224.

VENT
VENT
VENT
217
12"
25'-0" OFF ℄ P/S
218
DRESSING LINE STAPLE
GUARD RAIL
6"
VENT
220
8'-7" P/S
8'-7" P/S
2'-3 P/S
CENTER POST
222
CONTAINER SUPPORT & GUIDE SYSTEM REF. 10
FOR CONT. SEE REF. 11
24" FR. SPACING
GUARD CHAIN
6" R. TYP.
SAFETY HOOP
224
VENT
VENT
3 (TYP.)
VENT
12"
225
VENT
VENT
VENT
228
232
LINE OF AWNING P/S
236
238
240

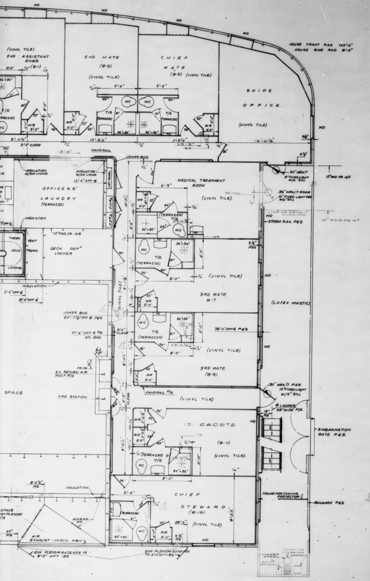
CHIEF COOK
5'-9½"

BUILDERS PLAN NO. H-4650-111-10-32

Sep 1980 10X

FRAME 1 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


WD
(VINYL TILE)
2ND ASSISTANT ENG'R (B-1)
2ND MATE (B-3) (VINYL TILE)
CHIEF MATE (B-5) (VINYL TILE)
HOUSE FRONT RAD 160'-0"
HOUSE SIDE RAD 8'-0"
SHIPS OFFICE (VINYL TILE)
WC
T/S (TERRAZZO)
WR
TC
3'-0" CLEAR
HANDRAIL
JOINER BHD
30" WEA/T 10" FIXED LIGHT W/6 SILL
12" FWD FR 165
INSULATION W/SM LINING
16'-6" OFF ℄
OFFICERS' LAUNDRY (TERRAZZO)
MEDICAL TREATMENT ROOM (VINYL TILE)
36" WEA/T DOOR 10" FIXED LIGHT P&S W/6" SILL
STORM RAIL P&S
12" FWD FR 168
TWEEN DECK LANDING
VENT TRUNK
DECK DEP^T LOCKER
INSULATION
5'-6" OFF ℄
8'-0" OFF ℄
3RD MATE B-7
(LATEX MASTIC)
JOINER BHD 20'-7 7/8" OFF ℄ P&S
17'-6" OFF ℄ P/S STL BHD
38'-0" OFF ℄ P&S
3RD MATE (B-9) (VINYL TILE)
A.C. RETURN AIR DUCT P/S
FIRE STATION
SPACE
HANDRAIL P/S
30" WEA/T P&S 10" FIXED LIGHT W/6" SILL
℄ LADDER 28" WIDE P/S
(2) CADETS (B-11) (VINYL TILE)
EMBARKATION GATE P&S
CHIEF STEWARD (B-13) (VINYL TILE)
FRAME FOR CANVAS PROTECTOR
BULWARK P&S
ACCESS MH
AIR EXHAUST - INSUL ABV
EXH. PLENUM EXTENDS TO 5'-0" AFT 182
EXH. PLENUM EXTENDS TO 5'-0" AFT 182
HINGED STOOL
HOIST CONTROL
TOPPING & SLEWING CONTROL

ABBREVIATIONS & NOTES.

ABV	ABOVE
AT	AIR TIGHT
BHD	BULKHEAD
℄	CENTER LINE
COAM	COAMING
DIA	DIAMETER
DK	DECK
DR	DOOR
FD	FIRE DOOR
F.T.	FUME TIGHT
FWD	FORWARD
F.T.G.T.	FUME TIGHT GAS TIGHT
F	FIXED
INSUL	INSULATION
LKR	LOCKER
MJD	METAL JOINER DOOR
V.C.	VANITY COMPARTMENT.
NT	NON TIGHT
DN	DOWN
P&S	PORT & STARBOARD
STAN	STANCHION
STL DR	STEEL DOOR
S.R.	STATE ROOM
T.C.	TOILET CABINET
T/S	TOILET & SHOWER
WEA/T	WEATHER TIGHT
WT	WATER TIGHT
WR	WARDROBE
WC	WATER CLOSET
WD	WINDOW.
S.C.F.D	SELF CLOSING FIRE DOOR
S.M.	SHEET METAL

BOAT DECK 8'-9" ABV. UPPER DECK.

NOTES:

1/ ALL DOORS ARE MJD UNLESS OTHERWISE NOTED
2/ DIMENSIONS FOR DOORS ARE CLEAR OPENINGS REQUIRED
3/ SHOWER'S TO HAVE GLASS FIBER REINFORCED DOORS
4/ ALL HOUSE WINDOWS TO BE 3'-0"x4'-0" HIGH SILL SET ABOUT 2'-9" ABV. FINISHED DECK.
5/ ALL WINDOWS SHALL HAVE HEAT TREATED GLASS
6/ ALL INCLINED LADDERS ON WEATHER DECKS SHALL HAVE A MIN CLEAR WIDTH OF 28"
7/ STANCHIONS SPACED MAX 5'-0" AT FRM 182 P/S.

RESERVATIONS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	7-24-80	4 3,4,5 4,5	1-DOOR TO CASING ADDED AT FR. 171-172. 2-JOINER BHD THICKNESS CHANGED FROM 7/8" TO 3/4" 3-BULKHEAD LOCATION DIMENSIONS REVISED.	CDS	[illegible]

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 14 JULY 1977
DRAWN E.B. [illegible]
IN CHARGE
CHECKED
EXAMINED [illegible] Miller
REVIEW
APPROVED [illegible]

PLAN NO. H4650-111-10-32 ALT. NO. 1 3

GENERAL
ARRANGEMENT
BOAT DECK

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-18-77				
A.B.S.					
U.S.C.G.	8-29-77				
LLOYD'S R.S.					
U.S.P.H.S.	8-12-77				

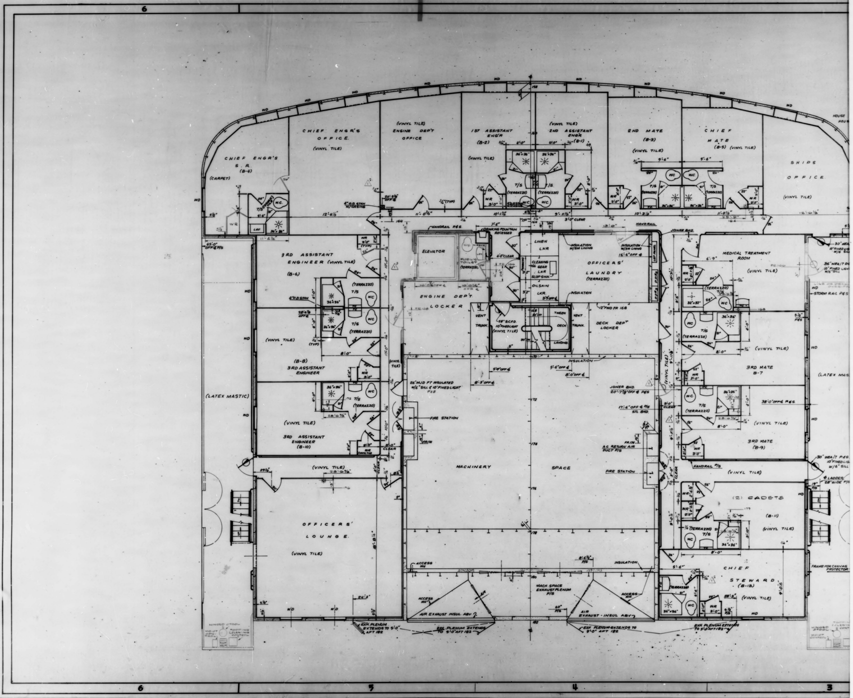
NO.	PLAN NO.	TITLE
10		JOINER GEN. ARRGT. BOAT DECK
9	234-00-01	DECK COVERING SCHEDULE
8	232-00-03	INCLINED LADDERS ABV. MAIN DECK
7	231-00-05	ARRGT. & DETAILS OF STORM RAILS-EXTERIOR
6	161-00-01	PAINTING SCHEDULE
5	145-00-01	WINDOW AND FIXED LIGHT LIST & LOCATIONS
4	129-04-21	MACHY CASING ABV. MAIN DK. AFT FR 187
3	129-04-15	ENCL. BHDS & FASHION PLTS- BOAT DK.
2	129-04-08	BOAT DECK PLATING & GIRDERS
1	H4650-129-04-03	INTERIOR BULKHEADS ON BOAT DECK

REFERENCE PLANS

		DATE OF ISSUE			
	ALTERATION	1	1	1	13
	ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]
MAIL	OWNERS	4			4
	AMERICAN BUREAU	3			
	LLOYD'S R.S.				
	U.S.M.A.				
	U.S NAVY				
	U.S.C.G.	3			
	JOINER CONT'R.				
	USPHS	3			
INSPECTION	OWNER'S INSP.	1		1	
	AM. BU. INSP.			1	
	LLOYD'S INSP.				
	U.S.M.A. INSP.			1	
	U.S. NAVY INSP.				
	U.S.C.G. INSP.			1	
	[illegible]			1	
OFFICE	HULL DRAFT. - 21		[illegible]	1	1
	MACH. DRAFT. - 22		[illegible]		
	ELEC DRAFT. - 23		[illegible]	1	
	OUTFIT. DRAFT. - 25				
	ESTIMATING				
	[illegible]		[illegible]	1	
MISC.	PRODUCTION (SCD)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	[illegible]	5	[illegible]	5
	YARD DISTRIBUTION		[illegible]	[illegible]	
YARD	[illegible]			1	
	[illegible]			1	
	PIECE RATE - 11				
	TEST DEPARTMENT			1	
	[illegible]			1	
	[illegible] PLANNING		[illegible]	7	
STRUCTURAL	GROUND ASSEMBLY			4	
	[illegible]			2	
	[illegible]			1	
	[illegible]			1	
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.			2	
	OPTICAL DETAIL			2	
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
	OUTFIT. #1 PIER			1	
	PIPE DRAFT. - 52			2	
	BOILER SHOP - 58				
	OUTSIDE MACH. - 60			1	
	[illegible]			1	
	ELECTRIC SHOP - 70				
	SHEET MET. SHOP - 74				
	COPPER SHOP - 51				
	PAINT SHOP - 75			1	
OTHER	WELDING				
	MOLD LOFT - 41			1	
	BRACKET SHOP				
	TOTAL YARD DIST.		[illegible]	[illegible]	

H-32

18.0 SQ.FT.

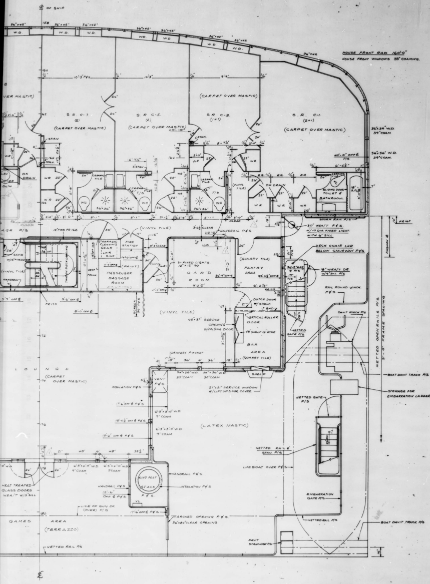

6
5
4
3
CHIEF ENGR'S S.R. (B-4) (CARPET)
CHIEF ENGR'S OFFICE (VINYL TILE)
(VINYL TILE) ENGINE DEP'T OFFICE
1ST ASSISTANT ENGR (B-2) (VINYL TILE)
(VINYL TILE) 2ND ASSISTANT ENGR (B-1)
2ND MATE (B-3) (VINYL TILE)
CHIEF MATE (B-5) (VINYL TILE)
SHIPS OFFICE (VINYL TILE)
HOUSE
3RD ASSISTANT ENGINEER (VINYL TILE) (B-6)
(VINYL TILE) (B-8) 3RD ASSISTANT ENGINEER
(VINYL TILE) 3RD ASSISTANT ENGINEER (B-10)
ELEVATOR
TOILET (TERRAZZO)
DRINKING FOUNTAIN RECESSED
HANDRAIL P&S
LINEN LKR
CLEANING GEAR LKR SLOP SINK
OILSKIN LKR
OFFICERS' LAUNDRY (TERRAZZO)
INSULATION
INSULATION W/SM LINING
ENGINE DEP'T LOCKER
VENT TRUNK
DECK DEP'T LOCKER
12" FWD FR 168
JOINER BHD
HANDRAIL
MEDICAL TREATMENT ROOM (VINYL TILE)
STORM RAIL P&S
(VINYL TILE) 3RD MATE B-7
(VINYL TILE) 3RD MATE (B-9)
(2) CADETS (B-11) (VINYL TILE)
CHIEF STEWARD (B-13) (VINYL TILE)
FRAME FOR CANVAS PROTECTOR
(LATEX MASTIC)
MACHINERY SPACE
FIRE STATION
AC RETURN AIR DUCT P/S
JOINER BHD 20'-7 1/2" OFF ℄ P&S
17'-6" OFF ℄ P/S STL BHD
26" MJD FT INSULATED W/6" SILL & 10" FIXEDLIGHT P&S
ACCESS MH
MACH SPACE EXHAUST PLENUM P/S
AIR EXHAUST INSUL ABV
AIR EXHAUST - INSUL ABV
EXH PLENUM EXTENDS TO 5'-0" AFT 182
OFFICERS' LOUNGE (VINYL TILE)
(VINYL TILE)
HANDRAIL P/S
30" WEA/T P&S 10" FIXED LIGHT W/6" SILL
℄ LADDER 28" WIDE P/S
T/S (TERRAZZO)
W.C.
WR
LAV
WD
164
168
172
176
178
182

BUILDERS PLAN NO. H-4650-111-10-32

Sep 1980 10X

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


℄ OF SHIP
158
36"×42"
W.D.
HOUSE FRONT RAD 160'-0"
HOUSE FRONT WINDOWS 33" COAMING.
160
10'-3" P&S
10'-3"
9'-9"
(CARPET OVER MASTIC)
S.R. C-7
(2)
S.R. C-5
(2)
S.R. C-3
(1+1)
S.R. C-1
(2+1)
36"×36" W.D.
39" COAM
45'-0" OFF ℄ P/S
6'-5½"
STAN
3" STAN.
W.R.
LAV.
DK DRAIN
BATH
CERAMIC TILE
T/S
WC
36"×36"
(VINYL TILE)
SLIDING DOOR
TOILET & BATHROOM
S.D.
STORM RAIL P/S
FR 167
30" WEA/T P&S. W/10 DIA FIXED LIGHT WITH 6" SILL
DECK CHAIR LKR BELOW STAIRWAY P&S
FASHION ℄
3-6½" CLEAR
HANDRAIL P&S
12" FWD FR 168
(TERRAZO) CLEANING GEAR LKR SINK
FIRE STATION
VENT TRUNK
(PAINT)
PASSENGER BAGGAGE ROOM
SCFD W/10" FIXED LIGHT
TWEEN DECK LANDING
HANDRAIL
3-FIXED LIGHTS 12"×12" SQ
CARD ROOM
9'-3⅛"
26'-9" OFF ℄
(QUARRY TILE)
PANTRY AREA
33'-0½" OFF ℄
6'-2½"
FR 170
18" WEA/T DR. W/9" SILL P/S
36'-2" OFF ℄ P/S
RAIL ROUND WINCH P&S.
DUTCH DOOR W/ SHELF
J. BHD
VERTICAL ROLLER DOOR
48" SHELF 14" WIDE
NETTED GATE P/S
DAVIT WINCH P/S
5'-9" OFF ℄
5'-6" OFF ℄
8'-0" OFF ℄
17'-5" OFF ℄
SCREEN 39" P&S
(VINYL TILE)
45"×37" SERVICE OPENING W/FOLDING DOOR
BAR AREA (QUARRY TILE)
DRAPERY POCKET
54"×36" W.D. 30" COAM
SHELF
27"×21" SERVICE WINDOW W/LIFT UP DOOR COVER
NETTED OPEN RAILS P/S
3'-0" FRAME SPACING
BOAT DAVIT TRACK P/S
STOWAGE FOR EMBARKATION LADDER
172
174
176
178
180
LOUNGE
(CARPET OVER MASTIC)
VENT P&S
INSULATION P&S
17'-6" OFF ℄ P&S
6'-3"×3'-0" W.D. 9" COAM
15'-0½" OFF ℄ P&S
15'-6" OFF ℄ P&S
(LATEX MASTIC)
NETTED GATE P/S
NETTED RAIL & STAN P/S
LIFEBOAT OVER P&S
EMBARKATION GATE P/S
21" 48" 6" 48" 33½"
6'-3"×4'-0" W.D. 9" COAM
HEAT TREATED GLASS DOORS WEA/T W/5" SILL
KING POST STACK P&S.
HANDRAIL P&S
12'-6" OFF ℄ P&S
INSULATION P&S
VL
LINE OF SUN DK (OVER) P/S
17'-6" OFF ℄ P&S
ARCHED OPENING P&S 36"×86" CLEAR OPENING
GAMES AREA
(TERRAZZO)
NETTED RAIL P/S
DAVIT STANCHION P/S
16"
℄

ABBREVIATIONS & NOTES.

ABV	ABOVE
AT	AIR TIGHT
BHD	BULKHEAD
℄	CENTER LINE
COAM	COAMING
DIA	DIAMETER
DK	DECK
DR	DOOR
FD	FIRE DOOR
FT	FUME TIGHT
FWD	FORWARD
FT GT	FUME TIGHT GAS TIGHT
F	FIXED
INSUL	INSULATION
LKR	LOCKER
MJD	METAL JOINER DOOR.
J BHD	JOINER BULKHEAD
NT	NON TIGHT
DN	DOWN
P&S	PORT & STARBOARD
STAN	STANCHION
STL DR	STEEL DOOR
SR	STATE ROOM
S.D.	SLIDING DOOR
W.C.	WATER CLOSET
T/S	TOILET & SHOWER
WEA/T	WEATHER TIGHT
W.T.	WATER TIGHT
WD	WINDOW
SCFD	SELF CLOSING FIRE DOOR.
W.R.	WARDROBE
V.C.	VANITY COMPARTMENT
S.M.	SHEET METAL
V.L.	VERTICAL LADDER

CABIN DECK 8'-9" ABOVE BOAT DECK

NOTES:-

1/ ALL DOORS ARE MJD UNLESS OTHERWISE NOTED.
2/ DIMENSIONS FOR DOORS ARE CLEAR OPENINGS REQUIRED.
3/ SHOWERS TO HAVE GLASS FIBER REINFORCED DOORS
4/ ALL WINDOWS SHALL HAVE HEAT TREATED GLASS
5/ ALL INCLINED LADDERS ON WEATHER DECKS SHALL HAVE A MIN. CLEAR WIDTH OF 24".
6/ STANCHIONS SPACED MAX 5'-0" ROUND WEATHER DECK
7/ DOORS SHOWN THUS ⌐∩⌐ HAVE A FULL LENGTH MIRROR ON SIDE INDICATED

RESERVATIONS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	7-24-80	4 3 2,4,5	1-AFT BHD OF LOUNGE DIMENTION CHANGED FROM 2'-3" TO 2'-4 13/16" TO SUIT REF. 3 2-CARD ROOM STANCHION RELOCATED. 3-JOINER BULKHEAD THICKNESS CHANGED FROM 7/8" TO 3/4"	C.D.S.	7/25/80 [illegible]

NO.	PLAN NO.	TITLE
11	HOPEMAN DWG. 103	JOINER GEN. ARRGT. CABIN DECK
10	234-00-01	DECK COVERING SCHEDULE
9	233-00-01	BOAT HANDLING ARRGT. & DETAILS
8	232-00-03	INCLINED LADDERS ABV. MAIN DECK
7	231-00-03	ARRGT. & DETS. OF STORM RAILS - EXTERIOR
6	231-00-02	RAILS & STANS. ARRGT. & DETS. CABIN DK & ABV.
5	161-00-01	PAINTING SCHEDULE
4	143-00-01	WINDOW & FIXED LT. LIST AND LOCATIONS
3	129-04-16	ENCL. BHDS. & FASHION PLTS. CABIN DECK
2	129-04-09	CABIN DK. PLATING & GIRDERS
1	H4650-129-04-04	INTERIOR BHDS. CABIN DECK

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 14 JULY 1977
DRAWN G.B.G.
IN CHARGE
CHECKED [illegible]
EXAMINED J.E. Miller
REVIEW [illegible]
APPROVED [illegible]

PLAN NO. H4650-111-10-33
ALT. NO. 1 3

GENERAL
ARRANGEMENT
CABIN DECK

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-18-77				
A.B.S.					
U.S.C.G.	8-29-77				
LLOYD'S R.S.					
U.S.P.H.S.	8-12-77				

		DATE OF ISSUE			
	ALTERATION	–	–	–	1
	ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]
MAIL	OWNERS	[illegible]			1
	AMERICAN BUREAU	[illegible]			
	LLOYD'S R.S.				
	U.S.M.A.				
	U.S. NAVY				
	U.S.C.G.	[illegible]			
	JOINER CONT'R.				
	USPH	[illegible]			
INSPECTION	OWNER'S INSP.	1		1	
	AM. BU. INSP.			1	
	LLOYD'S INSP.				
	U.S.M.A. INSP.			1	
	U.S. NAVY INSP.				
	U.S.C.G. INSP.			1	
	[illegible]			1	
OFFICE	HULL DRAFT.-21	[illegible]		1	1
	MACH. DRAFT.-22	[illegible]		2	
	ELEC. DRAFT.-23	[illegible]		1	
	OUTFIT. DRAFT.-25				
	ESTIMATING				
	[illegible]	[illegible]		1	
MISC.	PRODUCTION (SCO)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	[illegible]	[illegible]	[illegible]	5
	YARD DISTRIBUTION	[illegible]	[illegible]		
YARD	[illegible]			1	
	[illegible]			1	
	PIECE RATE-11			1	
	TEST DEPARTMENT				
	[illegible]			1	
	PLANNING	[illegible]		1	
STRUCTURAL	GROUND ASSEMBLY			4	
	[illegible]			4	
	[illegible]			1	
	[illegible]			1	
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.			2	
	OPTICAL DETAIL-46			2	
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP-52				
	OUTFIT. #1 PIER			1	
	PIPE DRAFT-52			2	
	BOILER SHOP-58				
	OUTSIDE MACH.-60			1	
	[illegible]			1	
	ELECTRIC SHOP-70				
	SHEET MET. SHOP-74				
	COPPER SHOP-81				
	PAINT SHOP-78			1	
OTHER	WELDING				
	MOLD LOFT-41			1	
	BRACKET SHOP				
	TOTAL YARD DIST.	[illegible]	[illegible]	[illegible]	

4 3 2 1

H-33

18.0 SQ.FT.

Sewed 3-Bay 3-21-7

BUILDERS PLAN NO. H-4650-111-10-33

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 10X

FRAME 1 OF 2

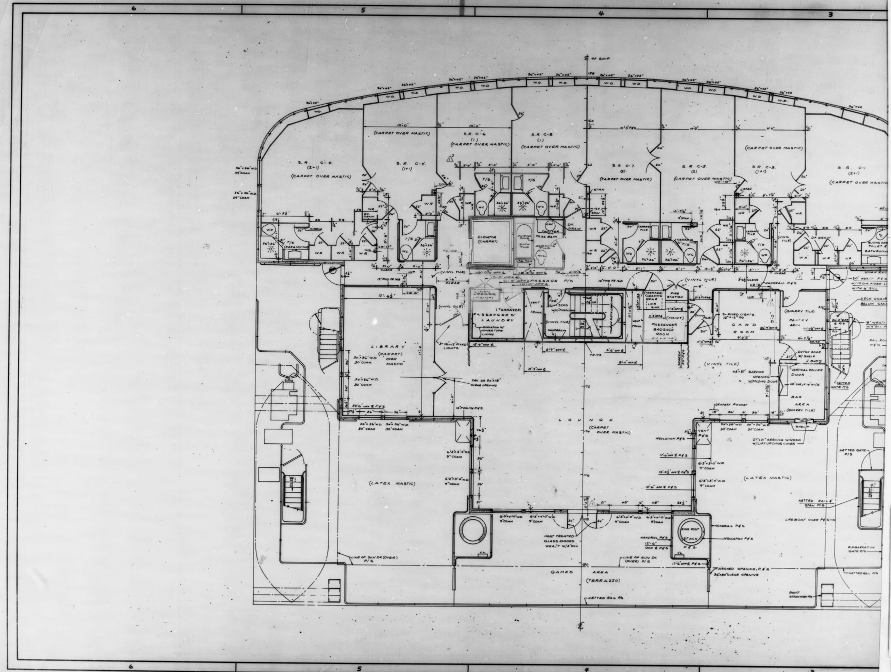
BUILDERS PLAN NO. H-4650-111-10-33

Sep 1980

10X

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910



6
5
4
3
℄ OF SHIP
S.R. C-2 (2+1) (CARPET OVER MASTIC)
S.R. C-4 (1+1)
S.R. C-6 (1) (CARPET OVER MASTIC)
S.R. C-8 (1) (CARPET OVER MASTIC)
S.R. C-7 (2) (CARPET OVER MASTIC)
S.R. C-5 (2) (CARPET OVER MASTIC)
S.R. C-3 (1+1) (CARPET OVER MASTIC)
S.R. C-1 (2+1) (CARPET OVER MASTIC)
W.D.
W.R.
T/S
ELEVATOR (CARPET)
PASS BATH
(VINYL TILE)
PASSAGE P/S
(TERRAZZO) PASSENGERS' LAUNDRY
VENT TRUNK
FIRE STATION
PASSENGER BAGGAGE ROOM
CARD ROOM
PANTRY AREA
LIBRARY (CARPET) OVER MASTIC
54"x36" W.D. 30" COAM
(VINYL TILE)
BAR AREA (QUARRY TILE)
LOUNGE (CARPET OVER MASTIC)
(LATEX MASTIC)
6'-3"x3'-0" W.D. 9" COAM
HEAT TREATED GLASS DOORS WEA/T W/3" SILL
RING POST STACK P&S
HANDRAIL P&S
INSULATION P&S
LINE OF SUN DK (OVER) P/S
GAMES AREA (TERRAZZO)
NETTED RAIL P/S
ARCHED OPENING P&S
LIFE BOAT OVER P&S
EMBARKATION GATE P/S
NETTED GATE P/S
DAVIT STANCHION P/S

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	9-13-77	5	1. BATTERY LOCKER BHD. RELOCATED TO ACCOMM. SPECIFIED EQUIPMENT.	CDS	JRM 9/14/7
2	7-24-80	4 3,4,5 3	1-INTERIOR STAIRWAY REVISED. 2-JOINER BULKHEAD THICKNESS CHGD. FROM 7/8" TO 3/4" 3-LADDER AND GATE RELOCATED FROM 12" FWD. FR. 168 AND 22'-0" OFF C.L. TO 18" AFT FR. 164 AND 36'-0" OFF C.L. STBD. ONLY	C.D.S.	7/25/80 JRM

ABBREVIATIONS & NOTES

CO	CLEAR OPENING
ABV	ABOVE
A.T.	AIR TIGHT
BHD	BULKHEAD
℄	CENTER LINE
COAM	COAMING
DIA	DIAMETER
DK	DECK
DR	DOOR
FD	FIRE DOOR
F.T.	FUME TIGHT
FWD	FORWARD
F.T.G.T.	FUME TIGHT GAS TIGHT
F	FIXED
INSUL	INSULATION
LKR	LOCKER
MJD	METAL JOINER DOOR
VC	VANITY COMPARTMENT
N.T.	NON TIGHT
DN	DOWN
P&S	PORT & STARBOARD
STAN	STANCHION
STL DR	STEEL DOOR
S.R.	STATE ROOM
SCFD	SELF CLOSING FIRE DOOR
TC	TOILET CABINET
T/S	TOILET & SHOWER
WEA/T	WEATHER TIGHT
W.T.	WATERTIGHT
W.R.	WARDROBE
W.C.	WATER CLOSET
WD	WINDOW
FS	FIRE STATION
SM	SHEET METAL
VL	VERTICAL LADDER

SUN DECK 8'-9" ABOVE CABIN DECK

NOTES:

1. ALL DOORS ARE M.J.D. UNLESS OTHERWISE NOTED.
2. DIMENSIONS FOR DOORS ARE CLEAR OPENINGS REQUIRED.
3. SHOWERS TO HAVE GLASS FIBER REINFORCED DOORS.
4. ALL HOUSE WINDOWS TO BE 3'-0"×4'-0" HIGH SILL SET ABOUT 2'-5" ABOVE STANDING DECK.
5. ALL WINDOWS SHALL HAVE HEAT TREATED GLASS.
6. ALL INCLINED LADDERS ON WEATHER DECKS SHALL HAVE A MIN CLEAR WIDTH OF 28"
7. STANCHIONS SPACED MAX 5'-0"
8. ALL VERTICAL LADDERS TO BE MIN 16" INSIDE STRINGERS

RESERVATIONS

LEGEND

───	STEEL BHD
═══	JOINER BHD
═╪═	JOINER LINING

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"　DATE 14 JULY 1977
DRAWN C/B - S　IN CHARGE
CHECKED　EXAMINED J.L. Mullin
REVIEW　APPROVED C.E. Jackson

PLAN NO. H4650-111-10-34　ALT. NO. 2³

GENERAL
ARRANGEMENT
SUN DECK

NO.	PLAN NO.	TITLE
13	HOPEMAN DWG. 102	JOINER GEN. ARRGT. SUN DECK
12	234-00-01	DECK COVERING SCHEDULE
11	233-00-01	BOAT HANDLING - ARRGT. & DETAILS
10	232-00-38	INFLATABLE LIFERAFT STOWAGE
9	232-00-03	INCLINED LADDERS ABV MAIN DECK
8	231-00-05	ARRGT. & DETAILS STORM RAILS - EXT.
7	231-00-02	RAILS & STANS. ARRGT. & DETS. CABIN DK & ABV.
6	211-00-04	RADAR MAST - ARRGT. & DETAILS
5	161-00-01	PAINTING SCHEDULE
4	145-00-01	WINDOW & FIXED LT. LIST & LOCATION
3	129-04-17	ENCL. BHDS. & FASHION PLTS. SUN DK.
2	129-04-10	SUN DECK PLTG. & GDRS
1	H4650-129-04-05	INTERIOR BHDS. ON SUN DECK

REFERENCE PLANS

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-18-77				
A.B.S.					
U.S.C.G.	8-29-77				
LLOYD'S R.S.					
U.S.P.H.S.	8-12-77				

		DATE OF ISSUE			
	ALTERATION	-	-	1	2³
	ENGINEERING DISTRIBUTION	7/15/77	7/15/77	9/14/77	7/25/80
MAIL	OWNERS	4		2	4
MAIL	AMERICAN BUREAU	3		3	
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.				
MAIL	U.S. NAVY				
MAIL	U.S.C.G.	3		3	
MAIL	JOINER CONT'R.			1	
MAIL	USPH	3		3	
INSPECTION	OWNER'S INSP.	1			
INSPECTION	AM. BU. INSP.			1	
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.				
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.			1	
INSPECTION	CD SCHAUB			1	
OFFICE	HULL DRAFT. - 21		1P	1	1
OFFICE	MACH. DRAFT. - 22		2P	2	
OFFICE	ELEC. DRAFT. - 23		1P	1	
OFFICE	OUTFIT. DRAFT. - 25				
OFFICE	ESTIMATING				
OFFICE	21-ID W.A. WOOD		1P	1	
MISC.	PRODUCTION (BCD)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
	TOTAL ENG'R. DIST.	14	5	20	5
	YARD DISTRIBUTION	/	7/15/77	9/20/77	
YARD	[redacted] NAB-OFFICE			1	
YARD	GEO. LASTBURG			1	
YARD	PIECE RATE - 11			1	
YARD	TEST DEPARTMENT				
YARD	QUALITY ASSURANCE			1	
YARD	[redacted] PLANNING		4P	7	
STRUCTURAL	GROUND ASSEMBLY			4	
STRUCTURAL	35 DEPT.			2	
STRUCTURAL	P. McNAIR			1	
STRUCTURAL	H. LEVY			1	
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.			2	
STRUCTURAL	OPTICAL DETAIL - 45			2	
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			2	
MACH'Y & OUTFIT.	BOILER SHOP - 58				
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			1	
MACH'Y & OUTFIT.	Q - MAT'L			1	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 51				
MACH'Y & OUTFIT.	PAINT SHOP - 75			1	
OTHER	WELDING				
OTHER					
OTHER	MOLD LOFT - 41			1	
OTHER	BRACKET SHOP				
	TOTAL YARD DIST.	/	4	30	

4650-51-ALT. 1

15.0 SQ. FT.

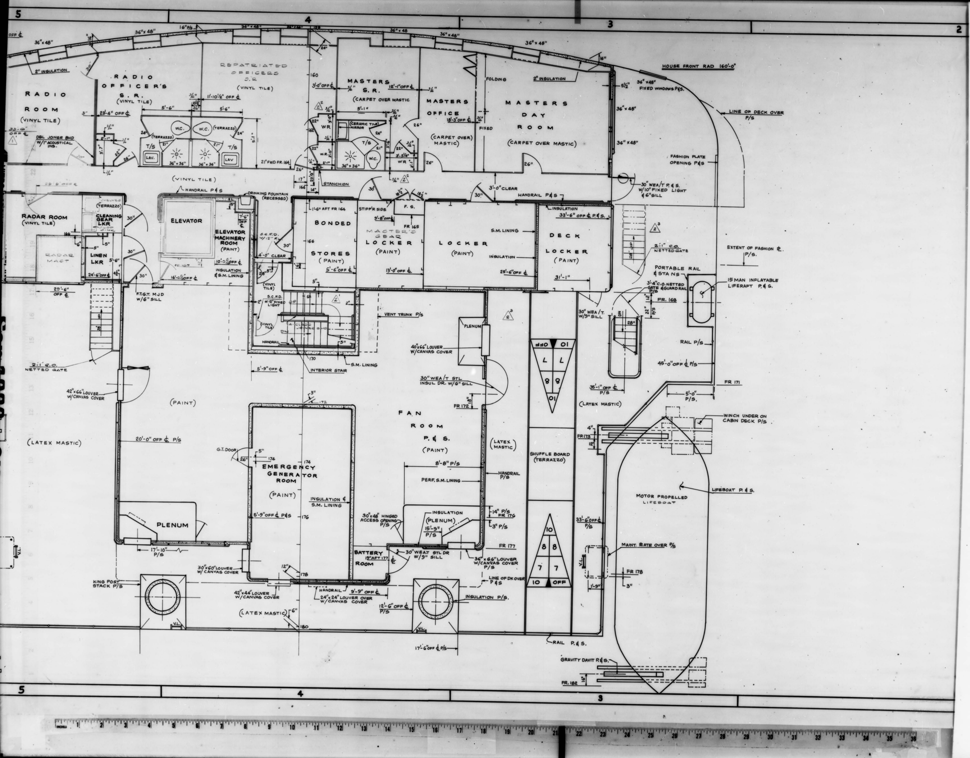
Sched submit 4/15/7

Sep 1980　8X

BUILDERS PLAN NO. H-4650-111-10-34

FRAME 1 OF 3

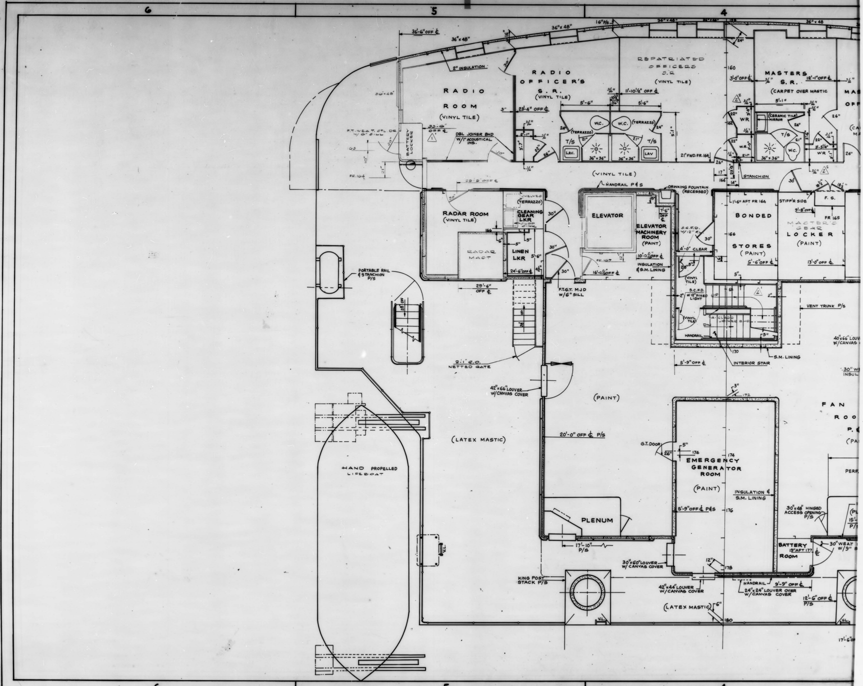
VIRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


RADIO ROOM (VINYL TILE)
RADIO OFFICER'S S.R. (VINYL TILE)
REPATRIATED OFFICERS S.R (VINYL TILE)
MASTERS S.R. (CARPET OVER MASTIC)
MASTERS OFFICE (CARPET OVER MASTIC)
MASTERS DAY ROOM (CARPET OVER MASTIC)
HOUSE FRONT RAD 160'-0"
2" INSULATION
36"x48"
36"x48" FIXED WINDOWS P&S.
LINE OF DECK OVER P/S
FASHION PLATE OPENING P&S
30" WEA/T P&S. W/10" FIXED LIGHT & 6" SILL
DBL JOINER BHD W/1" ACOUSTICAL INS.
W.C.
T/S
LAV
W.R.
STANCHION
HANDRAIL P&S
DRINKING FOUNTAIN (RECESSED)
RADAR ROOM (VINYL TILE)
CLEANING GEAR LKR
LINEN LKR
RADAR MAST
ELEVATOR
ELEVATOR MACHINERY ROOM (PAINT)
INSULATION & S.M. LINING
BONDED STORES (PAINT)
MASTER'S GEAR LOCKER (PAINT)
F.S.
FR 165
LOCKER (PAINT)
S.M. LINING
INSULATION
DECK LOCKER (PAINT)
2'-1" C.O. NETTED GATE
EXTENT OF FASHION ¢ P/S.
PORTABLE RAIL & STANS
15 MAN INFLATABLE LIFERAFT P&S.
3'-4" C.O. NETTED GATE & GUARD RAIL P/S
FR. 168
30" WEA/T. W/9" SILL
F.T.G.T. MJD W/6" SILL
S.C.F.D. W/12" FIXED LIGHT
A-CLASS JOINER BHD
HANDRAIL
INTERIOR STAIR
S.M. LINING
VENT TRUNK P/S
PLENUM
40"x66" LOUVER W/CANVAS COVER
30" WEA/T STL INSUL DR. W/6" SILL
RAIL P/S
45'-0" OFF ¢ P/S
FR 171
42"x66" LOUVER W/CANVAS COVER
2'-1" C.O. NETTED GATE
(PAINT)
(LATEX MASTIC)
20'-0" OFF ¢ P/S
FAN ROOM P. & S. (PAINT)
FR 172
WINCH UNDER ON CABIN DECK P/S
FR 173
G.T. DOOR
EMERGENCY GENERATOR ROOM (PAINT)
INSULATION & S.M. LINING
8'-8" P/S
PERF. S.M. LINING
HANDRAIL P/S
SHUFFLE BOARD (TERRAZZO)
MOTOR PROPELLED LIFEBOAT
LIFEBOAT P. & S.
30"x48" HINGED ACCESS OPENING P/S
INSULATION (PLENUM)
FR 176
FR 177
PLENUM
17'-10" P/S
BATTERY ROOM
30" WEAT STL DR W/9" SILL
36"x66" LOUVER W/CANVAS COVER P/S
LINE OF DK OVER P&S
MAINT. GATE OVER P/S
FR 178
30"x60" LOUVER W/CANVAS COVER
KING POST STACK P/S
42"x44" LOUVER W/CANVAS COVER
24"x24" LOUVER OVER W/CANVAS COVER
HANDRAIL 9'-9" OFF ¢
12'-6" OFF ¢ P/S
INSULATION P/S.
(LATEX MASTIC)
FR 180
RAIL P&S.
17'-6" OFF ¢ P/S
GRAVITY DAVIT P&S.
FR. 182
OFF 10 7 8 10 OFF
5 4 3 2

14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-34

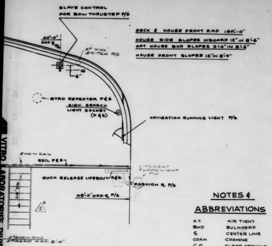
FRAME 2 OF 3


6
5
4
RADIO ROOM (VINYL TILE)
RADIO OFFICER'S S.R. (VINYL TILE)
REPATRIATED OFFICERS S.R. (VINYL TILE)
MASTERS S.R. (CARPET OVER MASTIC)
W.C.
T/S
LAV.
(TERRAZZO)
BATTERY LOCKER
DBL JOINER BHD W/1" ACOUSTICAL INS.
F.T. WEAT. CTL DR W/6" SILL
2" INSULATION
36"x48"
36'-6" OFF ℄
33'-0" OFF ℄
23'-4" OFF ℄
11'-10½" OFF ℄
5'-6"
21" FWD. FR. 164
FR. 164
(VINYL TILE)
HANDRAIL P&S
DRINKING FOUNTAIN (RECESSED)
STANCHION
RADAR ROOM (VINYL TILE)
RADAR MAST
CLEANING GEAR LKR
LINEN LKR
(TERRAZZO)
ELEVATOR
ELEVATOR MACHINERY ROOM (PAINT)
INSULATION & S.M. LINING
BONDED STORES (PAINT)
MASTER'S GEAR LOCKER (PAINT)
1'-6" AFT FR 164
STIFF'R SIDE
FR 165
5'-6" OFF ℄
13'-0" OFF ℄
29'-6" OFF ℄
24'-6" OFF ℄
16'-0½" OFF ℄
10'-0½" OFF ℄
4'-0" CLEAR
S.C.F.D. W/12" F.L.
S.C.F.D. W/12" FIXED LIGHT
F.T.G.T. MJD W/6" SILL
PORTABLE RAIL & STANCHION P/S
2'-1" G.O. NETTED GATE
VENT TRUNK P/S
INTERIOR STAIR
S.M. LINING
HANDRAIL
5'-9" OFF ℄
42"x66" LOUVER W/CANVAS COVER
(PAINT)
(LATEX MASTIC)
20'-0" OFF ℄ P/S
G.T. DOOR
EMERGENCY GENERATOR ROOM (PAINT)
INSULATION & S.M. LINING
5'-9" OFF ℄ P&S
FAN ROOM
HAND PROPELLED LIFEBOAT
PLENUM
17'-10" P/S
30"x60" LOUVER W/CANVAS COVER
42"x44" LOUVER W/CANVAS COVER
KING POST STACK P/S
BATTERY ROOM
19" AFT 177
30"x48" HINGED ACCESS OPENING P/S
HANDRAIL
9'-9" OFF ℄
24"x24" LOUVER OVER W/CANVAS COVER
12'-6" OFF ℄ P/S
(LATEX MASTIC)
V.L.
160
166
170
172
174
176
178
180

BUILDERS PLAN NO. H-4650-111-10-34

FRAME 3 OF 3

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


SLAVE CONTROL FOR BOW THRUSTEP P/S
40'-0" OFF ℄ P/S
AT WILL SWITCH P/S
161
6"
GYRO REPEATER P&S
SIGN. SEARCH LIGHT SOCKET (P&S)
NAVIGATION RUNNING LIGHT P/S
CHAIN RAIL
RAIL P&S
LIFEBOAT FLOODLIGHT P/S
QUICK RELEASE LIFEBOUY P&S
FASHION R. P/S
48'-0" OFF ℄ P/S
24" DN.
2 8
STANCHIONS SPACED MAX. 5'-0"

DECK & HOUSE FRONT RAD 160'-0"

HOUSE SIDE SLOPES INBOARD 12" IN 8'-6"

APT HOUSE BHD SLOPES 3'-0" IN 8'-6"

HOUSE FRONT SLOPES 12" IN 8'-9"

NOTES & ABBREVIATIONS

A.T.	AIR TIGHT
BHD	BULKHEAD
℄	CENTER LINE
COAM	COAMING
C.O.	CLEAR OPENING
DK	DECK
DN	DOWN
F	FIXED
LKR	LOCKER
M.J.D.	METAL JOINER DOOR
MTD	MOUNTED.
P&S	PORT & STBD
RAD	RADIUS
STAN	STANCHION
SS	STAINLESS STEEL
SD	STEEL DOOR
G.T.	GAS TIGHT
WEA.T.	WEATHER TIGHT
W.T.	WATER TIGHT
WC	WATER CLOSET
LAV	LAVATORY.
VL	VERTICAL LADDER

DECK.

DECK.

1/ WINDOWS	48"x 33"	18	REQUIRED. (FIXED)	
"	30"x 33"	2	"	
"	24"x 33"	2	"	
"	36"x 33"	1	"	(OPENING TYPE). ℄.
"	36"x 33"	2	"	(WING SHELTER).
"	48 x 33"	2	"	(W/CLEARVIEW SCREEN)

2/ WINDOWS ROUND BRIDGE SET 3'-6¾ (FINISHED SILL) ABOVE FINISHED DECK.

3/ WINDOWS SHALL BE INCLINED OUTBOARD FROM BOTTOM TO TOP EXCEPT AT AFT END WHICH SHALL FOLLOW SLOPE OF HOUSE

4/ ALL DOORS ARE MJD. UNLESS OTHERWISE NOTED.

5/ DIMENSIONS FOR DOORS ARE CLEAR OPENINGS REQ'D.

6/ ALL INCLINED LADDERS ON WEATHER DECKS SHALL HAVE A MINIMUM CLEAR WIDTH OF 24"

7/ RAIL STANCHIONS, ROUND DECK BOUNDARIES TO BE SPACED MAX 5'-0"

8/ ANTENNA ARRGT PENDING DEVELOPMENT.

9. ALL VL SHALL BE 16" CLEAR INSIDE STRINGERS.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	9.13.77	4	1. SHELVING IN EMERGENCY GEAR LOCKER INDICATED	C.O.S.	
		4	2. CHAIN REPLACED BY LOCKING GATE AT STAIRWELL		
		4	3. GYRO REPEATER MOVED FORWARD IN WHEELHOUSE		
		4	4. FIRE STATION NO. 1 RELOCATED TO SUIT CONTRACT GEN. ARRGT.		
		4	5. GYRO COMPASS MOVED FWD.		
		7	6. HEIGHT OF EXHAUST IN FALSE STACK REVISED.		
		5	7. TRANSOM SETTEE INDICATED IN OPEN AND CLOSED POSITION.		
		4	8. CAPTAINS WHEELHOUSE CHAIR INDICATED.		
		7	9. PYROTECHNICS LOCKER RELOCATED TO WHEELHOUSE TOP.		
		7	10. DECK LOCKERS ON WHEELHOUSETOP INDICATED.		
		4	11. DOOR SWING TO BRIDGE DECK TOILET CHANGED.		
		7	12. EMERGENCY POSITION INDICATING RADIOBEACON SHOWN.		
		7	13. VHF BRIDGE TO BRIDGE ANTENNA ON WHEELHOUSE TOP SHOWN		
		7	14. LORAN "C" ANTENNA AND SATTELITE NAVIGATION ANTENNA ON TOP OF STACK SHOWN. ABV. ALTS. TO SUIT G.G. SHARP APPVL. LTR. DATED 8-18-77		TLM
2.	7.24.80	4	1. INTERIOR STAIRWAY REVISED.		
		4	2. DIMENSION TO AFT END OF DECK CHANGED TO SUIT REF. 1.		
		4,5	3. MAIN AND EMERGENCY RADIO ANTENNAS AND PLATFORMS RELOCATED.		
		7	4. BINNACLE PLATFORM ON HOUSE TOP REVISED.		
		7	5. SAFETY HANDRAIL AROUND SSB TRANS. ANTENNA ADDED.		
		7	6- LINE THROWING GUN LKR. RELOCATED.		
		7	7- ANTENNAS REVISED.		
		3	8- LADDER AND CHAIN RAIL RELOCATED FROM 12" FWD. FR. 168 AND 22'-0" OFF C.L. TO 18" AFT FR. 164 AND 36'-0" OFF C.L. - STBD. ONLY.	CDS	7/25/80 TLM

ALTERATION	–	–	1	2
ENGINEERING DISTRIBUTION	7-15-77	7-15-77	9-14-77	7-28-80
MAIL: OWNERS	4		2	4
AMERICAN BUREAU	3		3	
LLOYD'S R.S.				
U.S.M.A.				
U.S. NAVY				
U.S.C.G.	3		3	
JOINER CONT'R.			1	
USPH	3		3	
INSPECTION: OWNER'S INSP.	1			
AM. BU. INSP.			1	
LLOYD'S INSP.				
U.S.M.A. INSP.				
U.S. NAVY INSP.				
U.S.C.G. INSP.			1	
CD SCHAUB			1	
OFFICE: HULL DRAFT. - 21	1	1	1	1
MACH. DRAFT. - 22	2	2	2	
ELEC. DRAFT. - 23	1	1	1	
OUTFIT. DRAFT. - 25				
ESTIMATING				
21-D WAWOOD	1	1	1	
MISC.: PRODUCTION (BCD)				
ORDER DEPT.				
JOINER CONT. YARD				
TOTAL ENG'R. DIST.	17	5	20	5
YARD DISTRIBUTION		7-15-77	9-20-77	
YARD: HDQ-OFFICE			1	
ED. EASTBURG			1	
PIECE RATE - 11			1	
TEST DEPARTMENT				
QUALITY ASSURANCE			1	
PLANNING		8	7	
STRUCTURAL: GROUND ASSEMBLY			4	
35 DEPT			2	
P. McNAIR			1	
H. LEVY			1	
NO. WAY				
NO. WAY				
NO. WAY				
NO. WAY				
STRUCT. SUPER.			2	
OPTICAL DETAIL - 45			2	
WET DOCK				
MACH'Y & OUTFIT.: PIPE SHOP - 52				
OUTFIT. #1 PIER			1	
PIPE DRAFT. - 52			2	
BOILER SHOP - 58				
OUTSIDE MACH. - 60			1	
Q-MATL			1	
ELECTRIC SHOP - 70				
SHEET MET. SHOP - 74				
COPPER SHOP - 51				
PAINT SHOP - 75			1	
OTHER: WELDING				
MOLD LOFT - 41			1	
BRACKET SHOP				
TOTAL YARD DIST.		14	30	

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 14 JULY 1977
DRAWN C.O.S.
IN CHARGE
CHECKED ✓
EXAMINED T.L. Mullin
REVIEWED ✓
APPROVED

PLAN NO. H4650-111-10-35
ALT. NO. 2ⁿᵈ

GENERAL ARRANGEMENT BRIDGE DECK & HOUSE TOP

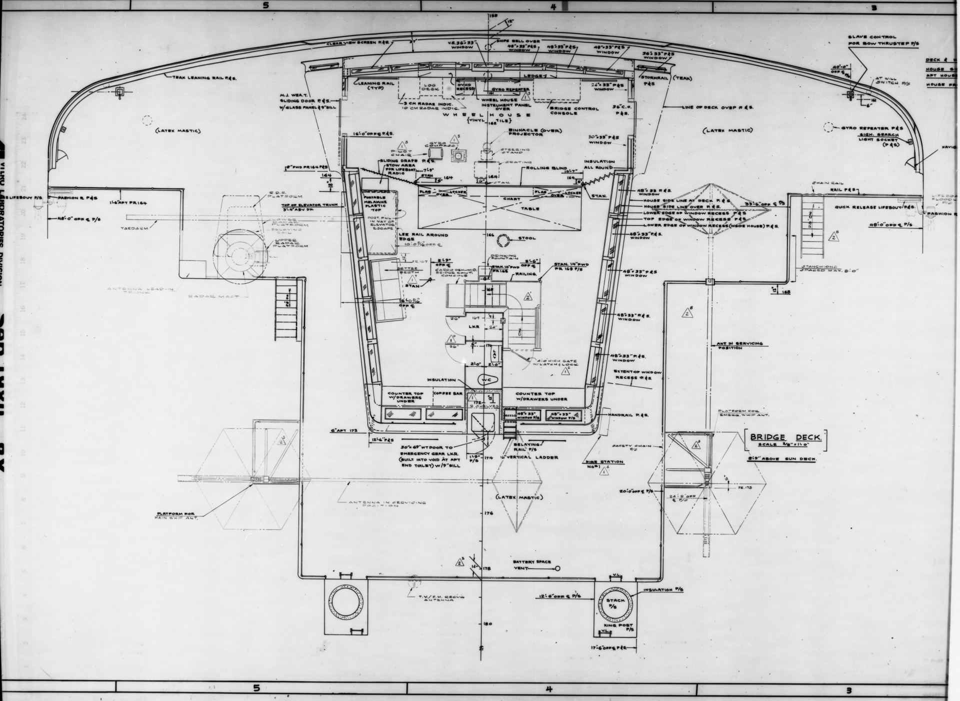
NO.	PLAN NO.	TITLE
13	H4650-129-04-12	BRIDGE HOUSE TOP PLATING
12	HOPEMAN DWG. NO 101	JOINER GEN. ARRGT. BRIDGE DECK
11	E4650-202-20-13	ARRGT. OF ELECT. EQUIP. IN WHEELHOUSE
10	E4650-202-35-01	RADIO ANTENNA - ARRGT. & DETAILS
9	H4650-234-00-01	DECK COVERING SCHEDULE
8	232-00-03	INCLINED LADDERS ABV. MAIN DECK
7	231-00-05	ARRGT. & DETAILS - STORM RAILS - EXTERIOR
6	231-00-02	RAILS & STANS. ARRGT. & DETS. - CABIN DK. & ABOVE
5	211-00-04	RADAR MAST - ARRGT. & DETAILS
4	161-00-01	PAINTING SCHEDULE
3	145-00-01	WINDOW AND FIXED LIGHT - LIST AND LOCATION
2	129-04-18	ENCL. BHDS. - BRIDGE DK. AND ABOVE
1	H4650-129-04-11	BRIDGE DECK PLATING

REFERENCE PLANS

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-18-77				
A.B.S.					
U.S.C.G.	8-29-77				
LLOYD'S R.S.					
U.S.P.H.S.	8-12-77				

20.0 SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910
Sep 1980 8X
BUILDERS PLAN NO. H-4650-111-10-35
FRAME 1 OF 3


5
4
3
159
12"
CLEAR VIEW SCREEN P&S.
27"
V.S. 36"x 33" WINDOW
SHIPS BELL OVER
48"x 33" P&S WINDOW
48"x 33" P&S WINDOW
48"x 33" P&S WINDOW
36"x 33" P&S WINDOW
TEAK LEANING RAIL P&S.
LEANING RAIL (TYP)
LOG DESK
OVHD RECESS
LEDGE
GYRO REPEATER
161
STORMRAIL P&S
(TEAK)
M.J. WEA.T. SLIDING DOOR P&S. W/GLASS PANEL & 9" SILL
3 CM RADAR INDIC.
10 CM RADAR INDIC.
WHEEL HOUSE INSTRUMENT PANEL OVER
BRIDGE CONTROL CONSOLE
24"x 33" P&S WINDOW
36" C.O. P&S.
LINE OF DECK OVER P&S.
WHEELHOUSE {VINYL TILE}
162
(LATEX MASTIC)
(LATEX MASTIC)
16'-0" OFF ℄ P&S.
BINNACLE (OVER) PROJECTOR
30"x 33" P&S WINDOW
GYRO COMPASS
PILOT CHAIR
STEERING STAND
GRATING
SLIDING DRAPE P&S.
STOW AREA FOR LIFEBOAT RADIO
7'-9"
STAN
164
ROLLING BLIND
INSULATION ALL ROUND
10'-7"
8" FWD FR 164 P&S
164
8"
6"
STAN.
FLAG OVER LOCKER
FLAG OVER LOCKER
CHART TABLE
STAN.
48"x 33" P&S. WINDOW
HOUSE SIDE LINE AT DECK P&S.
HOUSE SIDE LINE OVER P&S.
LOWER EDGE OF WINDOW RECESS P&S
TOP EDGE OF WINDOW RECESS P&S
LOWER EDGE OF WINDOW RECESS (INSIDE HOUSE) P&S.
48"x 33" P&S. WINDOW
SLAVE CONTROL FOR BOW THRUSTER P/S
40'-0" OFF ℄ P/S
AT WILL SWITCH P/S
161
6"
DECK & H
HOUSE SI
AFT HOUSE
HOUSE FR
GYRO REPEATER P&S
SIGN. SEARCH LIGHT SOCKET (P&S)
NAVIG.
CHAIN RAIL
RAIL P&S
33'-6" OFF ℄ P/S
QUICK RELEASE LIFEBOUY P&S
LIFEBOAT FLOODL. P/S
FASHION R
48'-0" OFF ℄ P/S
2'-0"
28"
2
QUICK RELEASE LIFEBOUY P/S
FASHION R P&S
1'-6" APT FR 164
R.D.F. PLATFORM
TOP OF ELEVATOR TRUNK 3'-4" ABV DK
48'-0" OFF ℄ P/S
YARDARM
LOWER RADAR PLATFORM
BELAYING RAIL
UPPER RADAR PLATFORM
V.L.
PORTABLE MELAMINE PLASTIC TOP
PORT. PNL IN WAY OF ELEVATOR ESCAPE
LEE RAIL AROUND EDGE
10'-0 5/16" OFF ℄
166
STOOL
DRINKING FOUNTAIN
FR. 167
5'-9" OFF ℄
5'-6" OFF ℄
CARGO DEHUMID. BRIDGE CONT. CONSOLE
STAN. 14" FWD FR 168
STAN. 14" FWD FR 168 P/S
RAILING.
SETTEE BERTH
STAN
ANTENNA LEAD-IN TRUNK
RADAR MAST
16'-0 5/16" OFF ℄
168
STANCHIONS SPACED MAX. 8'-0"
12"
168
26"
169
LKR
24"
26"
6"
170
LAV
2'-0"
2'-0"
4'-0" HIGH GATE W/LATCH & LOCK
48"x 33" P&S. WINDOW
48"x 33" P&S WINDOW
48"x 33" P&S. WINDOW
ANT IN SERVICING POSITION
EXTENT OF WINDOW RECESS P&S.
INSULATION
WC
COUNTER TOP W/DRAWERS UNDER
COFFEE BAR
172
2 SHELVES
COUNTER TOP W/DRAWERS UNDER
48"x 33" WINDOW P/S
48"x 33" WINDOW P/S
HANDRAIL P&S.
6" APT 173
12'-6" P&S
30"x 69" WT DOOR TO EMERGENCY GEAR LKR. (BUILT INTO VOID AT APT END TOILET) W/9" SILL
1'-9" P/S
174
BELAYING RAIL P/S
16" VERTICAL LADDER
SAFETY CHAIN P/S
FIRE STATION NO. 1
PLATFORM FOR EMERG. WHIP ANT.
FR. 173
20'-0" OFF ℄ P/S
24'-9" OFF ℄ P/S
ANTENNA IN SERVICING POSITION
PLATFORM FOR MAIN WHIP ANT.
(LATEX MASTIC)
176
178
14"
BATTERY SPACE VENT
V.L.
T.V./F.M. RECV'G ANTENNA
12'-6" OFF ℄ P/S
INSULATION P/S
STACK P/S
KING POST P/S
V.L.
180
17'-6" OFF ℄ P&S.
℄

BRIDGE DECK.

SCALE 3/8" = 1'-0"

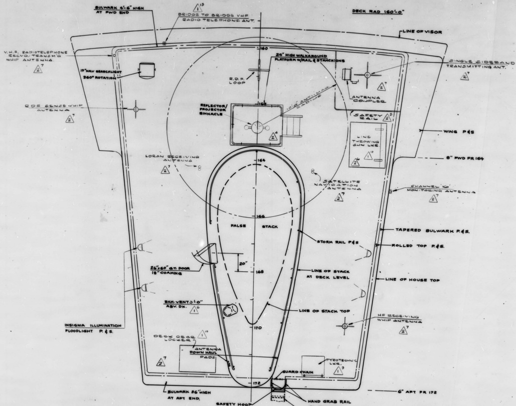
8'-9" ABOVE SUN DECK.

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-35

FRAME 2 OF 3

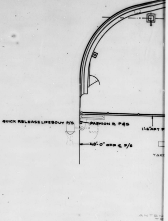
Sep 1980 8X


BULWARK 4'-6" HIGH AT FWD END
BRIDGE TO BRIDGE VHF RADIO TELEPHONE ANT.
DECK RAD 160'-0"
LINE OF VISOR
V.H.F. RADIOTELEPHONE RECVG/TRANSM'G WHIP ANTENNA
19" NAV SEARCHLIGHT 360° ROTATION
R.D.F. LOOP
24" HIGH WALKAROUND PLATFORM W/RAIL & STANCHIONS
SINGLE SIDEBAND TRANSMITTING ANT.
ANTENNA COUPLER
R.D.F. SENSE WHIP ANTENNA
REFLECTOR/ PROJECTOR BINNACLE
10'-0" ANTI-MAG. RADIUS
SAFETY RAIL
WING P&S
LINE THROWING GUN LKR.
8" FWD FR 164
LORAN RECEIVING ANTENNA
SATELLITE NAVIGATION ANTENNA
CHANNEL '16' MONITORING ANTENNA
160
162
164
166
168
170
172
FALSE STACK
TAPERED BULWARK P&S.
STORM RAIL P&S
ROLLED TOP P&S.
26"x60" G.T. DOOR 18" COAMING
20"
LINE OF STACK AT DECK LEVEL
LINE OF HOUSE TOP
EXH. VENT 3'-0" ABV. DK.
LINE OF STACK TOP
HF RECEIVING WHIP ANTENNA
INSIGNIA ILLUMINATION FLOODLIGHT P. & S.
DECK GEAR LOCKER
ANTENNA DOWN HAUL PADS
PYROTECHNIC LKR.
GUARD CHAIN
BULWARK 36" HIGH AT AFT END.
SAFETY HOOP ON BULWARK.
HAND GRAB RAIL ON BULWARK
VERTICAL LADDER.
6" AFT FR 172
1 13
2 7
2 4
2 5
2 6
1 10
1 6
1 3

HOUSE TOP

SCALE:- 3/8" = 1'-0"

8'-6" ABOVE BRIDGE DECK


QUICK RELEASE LIFEBOUY P/S
FASHION R. P&S
1'-6" AFT F
48'-0" OFF ℄ P/S

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-10-35

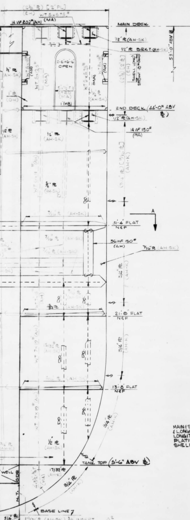
FRAME 3 OF 3

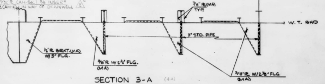
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

BUILDERS PLAN NO. H-4650-111-10-38

FRAME 1 OF 5


(2⅛" ℞) [2" PL]
(EH)
WT 5×5.75#
(MA)
14 WF 202# (AH)
MAIN DECK
½" ℞ (AH-SK)
½" ℞ BRKT. (AH-SK)
53'-0" ABV ℄
2'-6"×6'-6" OPEN
WT 8×18# (AH)
WT 5×12.5# (MA)
WT 5×5.75# (MA)
(2⅛ ℞) [2" ℞] (EH)
SHELL LONG'L STOWF 18# (AH)
½" ℞ (AH-SK)
5×½ F.B. CTRD (MA)
1" ℞ (DH)
½" ℞ (AH-SK)
1" (MB)
2ND DECK (44'-0" ABV ℄)
½" ℞ (AH-SK)
14 WF 150# (MA)
½" ℞ (AH-SK)
½" ℞ (AH-SK)
(3/4" ℞) [1 1/16" ℞] (AH-K)
WT 6×11# (AH)
⅜" ℞ (AH-SK)
7/16" ℞ (AH-SK)
31'-4" FLAT N&F
A
7/16" ℞ (AH-SK)
56 WF 150# (AH)
7/16" ℞ (AH-SK)
7/16" ℞ (AH-SK)
3/4" ℞ (AH-K)
WT 7×15# (AH)
7/16" ℞ (AH-SK)
13/32" ℞ (AH-SK)
21'-8" FLAT N&F
WT 7×19# (AH)
15/32" ℞ (AH-SK)
3/4" ℞ (AH-K)
5/16" ℞ (AH-SK)
13'-8" FLAT N&F
WT 7×19# (AH)
3/4" ℞ (AH-K)
½" ℞ (AH-SK)
3/4" ℞ (AH-K)
TANK TOP (5'-6" ABV ℄)
WELL
17/32" ℞ (AH-K)
4×3½×⅜ (MA)
3/4" ℞ (AH-K)
N.T.
BASE LINE
3/4" ℞ (AH-K)
1 15/32" ℞ (AH-SK) 3/4 INSERT ℞ (AH-K) IN WAY OF DRAINWELL 2


9/16" ℞
⅜" ℞ (MA) TYP.
W.T. BHD
3" STD. PIPE
½" ℞ BRKT. (MA) W/3" FLG.
⅜" ℞ W/2½" FLG. (MA)
⅜" ℞ W/2½" FLG. (MA)
½" OFF ℄

SECTION 3-A (4-A)
HORIZONTAL BRACKETS AT 13'-8" & 16'-3" W.L.
PORT SIDE SHOWN - STBD. SIM. TO OPP. HAND

CLASSIFICATION

1. AMERICAN BUREAU OF SHIPPING :- ✠ A1 Ⓔ GEN. CARGO
2. ANCHORS - (3) BALDT SNUG STOWING, HIGH HOLDING POWER AT 13,725 LBS. EACH.
3. ANCHOR CHAIN - 345 FATHOMS - 2¾" DIA. EXTRA HIGH STRENGTH (GR. 3) STUD LINK CHAIN.
4. EQUIPMENT NUMBER U-3B
5. HAWSER - (6) 109 FATHOMS - 7" CIRC. PLAITED DACRON JACKETED POLYPROPYLENE.

PRINCIPAL DIMENSIONS

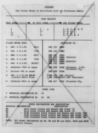
	LENGTH OVERALL	813'-3"
	LENGTH ON 33'-0" W.L.	787'-0"
	LENGTH BETWEEN PERPENDICULARS ON 29'-0" W.L.	769'-0"
3'	LENGTH BETWEEN PERPENDICULARS ON 33'-0" W.L.	776'-0"
	BEAM MOLDED	90'-0"
	DEPTH MOLDED TO MAIN DK. MIDSHIP	53'-0"
	SCANTLING & SUBDIVISION DRAFT MOLDED	33'-0"
	DESIGN DRAFT MOLDED	28'-0"

HULL LONGITUDINAL STRENGTH MEMBERS

MAIN & SECOND DECK PLATING & LONGITUDINALS, INNER BOTTOM PLATING & LONGITUDINALS, BOTTOM SHELL LONGITUDINALS, INNER BOTTOM LONGITUDINAL GIRDERS, WING BULKHEAD (MAIN TO SECOND DECK) PLATING & LONGITUDINALS, SHEER STRAKE LONGITUDINALS, & SHELL PLATE.

GENERAL NOTES

2. 1 ALL MATERIAL TO A.B.S. 1975 RULES GR. A, B, "AH-36", "DH-36" OR "EH-36" UNLESS OTHERWISE NOTED
2. SCANTLINGS OF MAIN DECK PLATING AND SIDE SHELL ABOVE LOAD LINE ARE REDUCED IN ACCORDANCE WITH A.B.S. ALLOWANCES FOR APPROVED PROTECTIVE COATINGS. SCANTLINGS SHOWN IN [ ] ARE REDUCED FIGURES. SCANTLINGS SHOWN IN ( ) DENOTES A.B.S. RULE THICKNESS WITHOUT REDUCTION FOR CORROSION CONTROL.
3. OVERFLOW FOR DEEP TANKS & D.B. TANKS IS 2'-6" BELOW MAIN DK.


WELDING
Use Filler Metal in Accordance with the Following Table:

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	1-27-77	3,4,6	1. CHANGED TRANSVERSE GIRDER AT MAIN DECK FROM (AH-K) TO (DH)	LAM	
		9	2. CHANGED FACE ℞ ON BOAT DECK GIRDER FROM 4"×½" TO 5"×½"		
		9	3. CHANGED UPPER DECK BEAMS FROM 7"×4"×½" TO 7"×4"×9/16"	DEB	
		7	4. CHANGED SHELL FRAME BETWEEN 21'-8 FLAT & TANK TOP FROM WT 7×19# TO WT 9×25#		
		8	5. CHANGED VENT CUTS. ITEMS 1 THRU 5 PER GGS LETTER 1-13-77		JLM
		4,8	6. CHANGED ℞ BUTTS IN WAY OF LONG'L BHD ITEM 6 PER DEVELOPMENT		2/3/77 BSM
2	3-16-77	2 3	1 REVISED GN #1 2 REVISED INDICATION OF INSERT PLATE IN WAY OF DRAINWELL ITEMS 1 & 2 PER G.G.S. LETTER OF 3-7-77	G.D. DEB	JLM 3/16
3	5-31-77	2.	1. ADDED L.B.P. ON 33'-0" W.L. IN PRINCIPAL DIMENSIONS COLUMN. PER A.B.S. APPVL OF 5-17-77	G.D. DEB	

ABS 5-17-77
GGS 3-7-77
USCG 6-13-77

4651		4650
4650		4650
HULL	DESIGN	CHARGE

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 20 DEC. 1976
DRAWN C/B
IN CHARGE DEB
CHECKED DEB
EXAMINED
REVIEW WJL MEMO 12-16-76
APPROVED R. Jaulen

PLAN NO. H-4650-111-10-38
ALT. NO. 3'

MIDSHIP & TYPICAL SECTIONS

(NON WORKING DRAWING)

	APPROVAL LETTERS				
HULL	4650-1				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-13-77				
A.B.S.	5-17-77				
U.S.C.G.	6-13-77				
LLOYD'S R.S.					
U.S.P.H.S.					

KEY PLAN

NO.	PLAN NO.	TITLE

REFERENCE PLANS

		DATE OF ISSUE											
	ALTERATION	-	-	-	1	2	3	3'	3'				
	ENGINEERING DISTRIBUTION	12/10/76	12/20/76	12/20/76	2/3/77	3/18/77	6/13/77	6/13/77	11/17/77				
MAIL	OWNERS		4		4		2						
	AMERICAN BUREAU		3		3								
	LLOYD'S R.S.												
	U.S.M.A.		3		3		1						
	U.S. NAVY												
	U.S.C.G.		2		2								
	JOINER CONT'R.												
INSPECTION	OWNER'S INSP.					1P	1		1				
	AM. BU. INSP.							1	1				
	LLOYD'S INSP.												
	U.S.M.A. INSP.						1		1				
	U.S. NAVY INSP.												
	U.S.C.G. INSP.							1	1				
	CD SCHAUB								1				
OFFICE	HULL DRAFT. - 21			1P	1P	1P		1	1				
	MACH. DRAFT. - 22			1P	1P	2P		2	2				
	ELEC. DRAFT. - 23			1P	1P	1P		1	1				
	OUTFIT. DRAFT. - 25												
	ESTIMATING												
	WJ LANE	2P		1P	1P	1P		1	1				
MISC.	PRODUCTION (BCD)												
	ORDER DEPT.												
	JOINER CONT. YARD												
	TOTAL ENG'R. DIST.	2	12	4	16	6	5	7	10				
	YARD DISTRIBUTION	/	12/20/76	12/20/76	2/3/77	3/18/77	6/14/77	11/18/77					
YARD	MAD-OFFICE						1	1					
	P McNAIR		2P		2P	1P	1	1					
	PIECE RATE - 11					1P	1	1					
	TEST DEPARTMENT												
	GEO. EASTBURG						1	1					
	PLANNING			1P	1P	1P	1	1					
STRUCTURAL	GROUND ASSEMBLY						4	4					
	35 DEPT.						2	2					
	H. LEVY						1	1					
	QUALITY ASSURANCE						1	1					
	NO. WAY												
	NO. WAY												
	NO. WAY												
	NO. WAY												
	STRUCT. SUPER.						2	2					
	OPTICAL DETAIL-46			2P	2P	1P	2	2					
	WET DOCK												
MACH'Y & OUTFIT.	PIPE SHOP - 52												
	OUTFIT. #1 PIER						1	1					
	PIPE DRAFT. - 52						2	2					
	BOILER SHOP - 58						1	1					
	OUTSIDE MACH. - 60						1	1					
	Q-MAT-L						1	1					
	ELECTRIC SHOP - 70												
	SHEET MET. SHOP - 74												
	COPPER SHOP - 51												
	PAINT SHOP - 75						1	1					
OTHER	WELDING												
	MOLD LOFT - 41						1	1					
	BRACKET SHOP												
	TOTAL YARD DIST.	/	2	3	5		25	25					

4650-51-ALT. 3'
4650-51-ALT. 3'

32.5 SQ.FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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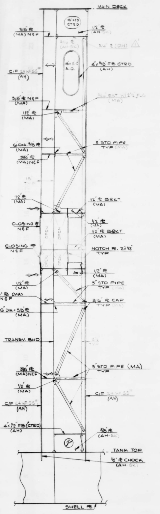
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

BUILDERS PLAN NO. H-4650-111-10-38

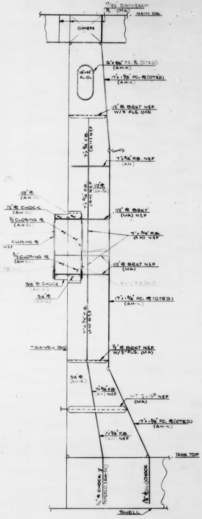
FRAME 2 OF 5



MAIN DECK
3/16" ℞ (MA) N&F
15×23 CTRD
1/2" ℞ (AH-SK)
3/4" ℞ (DH)
16×30 A.O.
4"×1/2" FB CTRD (AH)
C/F 24 WF 55# (AH)
3/8" ℞ (MA) N&F
1/2" ℞ (MA)
5" STD PIPE TYP
6" DIA 3/8" ℞ (MA)
3/8" ℞ (MA) N&F
1/2" ℞ (MA)
1/2" ℞ BRKT (MA)
CLOSING ℞ N&F
1/2" ℞ (MA)
1/2" ℞ BRKT
CLOSING ℞ N&F
NOTCH ℞ 2"×1/2" TYP
1/2" ℞ (MA)
3" STD PIPE TYP
3/16" ℞ CAP TYP
TRANSV. BHD
3" STD PIPE (MA) TYP
C/F 24 WF 55# (AH)
4"×1/2" FB (CTRD) (AH)
3/8" ℞ (AH-SK)
TANK TOP
1/2" ℞ CHOCK (AH SK)
SHELL ℞

SECTION 6-A TYPICAL

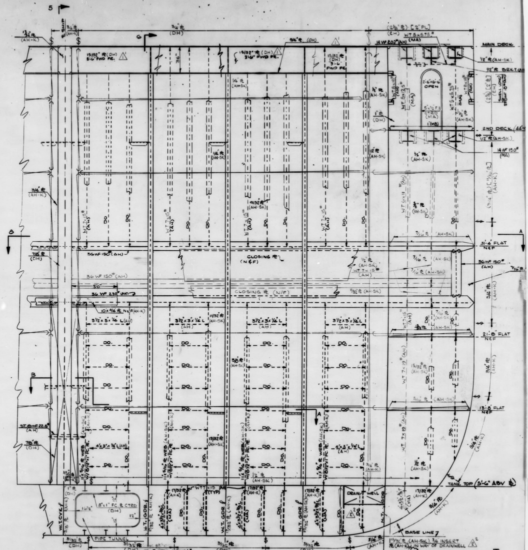
VERTICAL STIFFENER
SHOWN LOOKING TO PORT
SCALE: 3/8"=1'-0"
(4-A)



17/32" DIAPHRAGM ℞ (MA)
MAIN DK.
OPEN
18×42 A.O.
6"×3/4" FC. ℞ (CTRD) (AH-K)
17"×1 3/8" FC. ℞ (CTRD) (AH-K)
1/2" ℞ BRKT N&F W/3" FLG. (MA)
7"×3/4" FB. N&F (AH)
1/2" ℞ (AH-SK)
1/2" ℞ CHOCK (AH-SK)
3/8 CLOSING ℞ (AH SK)
CLOSING ℞ N&F
3/8 CLOSING ℞ (AH SK)
1/2" ℞ BRKT (MA) N&F
7"×3/4" F.B. (AH) N&F
1/2" ℞ BRKT N&F (MA)
3/4" ℞ CHOCK (AH-K)
3/4" ℞ (AH-K)
17"×1 3/8" FC. ℞ (CTRD) (AH-K)
TRANSV. BHD
1/2" ℞ BRKT N&F W/3" FLG. (MA)
3/4" ℞ (AH-K)
7"×3/4" FB (AH) N&F
WT 7×15# N&F (MA)
17"×1 3/8" FC. ℞ (CTRD) (AH-K)
7"×3/4" F.B. (AH) N&F
TANK TOP
3/4" ℞ CHOCK TAPERED (AH-SK)
3/4" ℞ CHOCK (AH-SK)
SHELL

SECTION 5-A TYPICAL

VERTICAL STIFFENER AT ℄ SHIP
SHOWN LOOKING TO PORT
SCALE: 3/8"=1'-0"
(4-A)

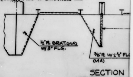


5
6
1 3/32" ℞ (AH-K)
3/4" ℞ (AH-K)
3/4" ℞ (DH)
15/32" ℞ (DH) 3'-6" FWD FR.
15/32" ℞ (DH) 3'-6" FWD FR.
3/4" ℞ (DH)
15/32" ℞ (DH) 3'-6" FWD FR.
(2 1/2" ℞) [2" PL] (EH)
WT 5×37.5#
14 WF 202# (AH)
MAIN DECK
1/2" ℞ (AH-SK)
1/2" ℞ BRKT (AH)
2'-6"×6'-6" OPEN
1/4" ℞ (AH-SK)
1/2" ℞ (AH-SK)
1" (DH)
1" (MB)
2ND DECK
1/2" ℞ (AH-SK)
14 WF 150# (MA)
3/4" ℞ (AH-K)
9/32" ℞ (AH-SK)
WT 7×15#
3/8" ℞ (AH-SK)
31'-4" FLAT N&F
7/16" ℞ (DH)
36 WF 150 (AH)
CLOSING ℞ (N&F)
36 WF 150# (AH)
36 WF 150 (AH)
50"
36 WF 230# (AH)
CLOSING ℞ (N/F)
10×3/4 ℞ N&F (AH-K)
3 1/2×3"×1/4" L (AH)
11/32" ℞ (AH-SK)
21'-8" FLAT N&F
13'-8" FLAT N&F
ST. 8 WF 22.5#
7/16" ℞ (DH)
4"×3"×1/4" L (AH)
13/32" ℞ (AH-SK)
WT 7×19# (AH)
3/4" ℞ (AH-K)
1/2" ℞ (AH-SK)
TANK TOP (5'-6" ABV ℄)
8"×1" FC. ℞ CTRD (DH)
16 1/2"
12"
DRAIN WELL
W.T. CVK. ℄
W.T. GDR. ℄
N.T. GDR. ℄
17/32" ℞ (AH-K)
17/32" ℞ (AH-K)
3/4" ℞ (AH-K)
PIPE TUNNEL
SHELL LONG'S WT 7×13 (AH) (TYP)
BASE LINE
1 3/32" ℞ (AH-SK) 3/4 INSERT ℞ (AH-K) IN WAY OF DRAINWELL
31/32" ℞ (DH)
31/32" ℞ (DH)
A
3
8

SECTION 4-A TYPICAL TRANSV. W.T. BHD

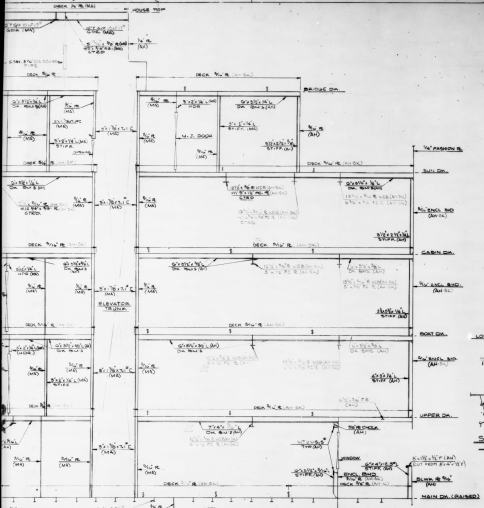
PORT SIDE SHOWN LOOKING AFT - STBD SIM TO OPP. HAND.

A
9'-4" OFF ℄
17'-10" OFF ℄
26'-4" OFF ℄
35'-3 1/2" OFF ℄



1/2" ℞ BRKT (MA) W/3" FLG.
3/8" ℞ W/2 1/2" FL (MA)

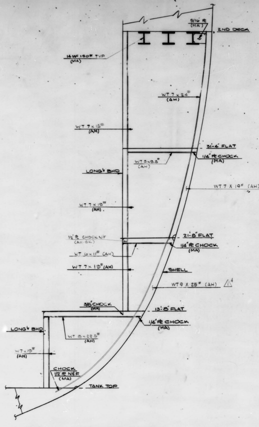
SECTION
HORIZONTAL BRAC
PORT SIDE SHOWN -


DECK 1/4" PL (MA)
HOUSE TOP
10"T C/F 10 WF 17 GDR (MA)
STAN. 3 1/2" DIA SCH 40 PIPE
DECK 5/16" PL
DECK 5/16" PL (AH-SK)
BRIDGE DK.
6"x3 1/2"x1/4" L DK. BM'S (AH)
3"x2"x1/4" L HDR
N. J. DOOR
3"x2"x1/4" L STIFF. (MA)
3 1/2"x2 1/2"x1/4" L STIFF. (AH)
3"x1 7/8"x7.1# C (MA)
1/4" FASHION PL
SUN DK.
5/16" ENCL BHD (AH-SK)
3 1/2"x2 1/2"x1/4" L STIFF. (AH)
CABIN DK.
ELEVATOR TRUNK
BOAT DK.
4"x3"x1/4" L STIFF (AH)
UPPER DK.
6"x4"x12.3# L STIFF. (AH)
8"x1 1/2"x1/2" Γ (AH) (CUT FROM 8"x4"x1/2" T)
WINDOW
ENCL. BHD 5/16" PL (AH-SK)
BLWK PL 5/16" (AH)
DECK 3/8" PL (AH-K)
MAIN DK. (RAISED)
NOTE: JOINER BHD. & LININGS NOT SHOWN FOR CLARITY

SECTION 9-A TYPICAL THROUGH SUPERSTRUCTURE

PORT SIDE SHOWN LOOKING AFT.

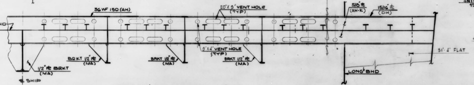
SCALE: 3/8"=1'-0"


5/16" PL (MA)
2ND DECK
14 WF 150# TYP (MA)
WT 7 x 24# (AH)
WT 7 x 15# (AH)
31'-4" FLAT
1/4" PL CHOCK (MA)
WT 5 x 38.5# (AH)
LONG'L BHD
WT 7 X 19# (AH)
1/2" PL CHOCK N/F (AH-SK)
21'-8" FLAT
1 1/4" PL CHOCK (MA)
WT 6 x 11# (AH)
WT 7 x 13# (AH)
SHELL
WT 9 X 25# (AH)
3/8" PL CHOCK (MA)
13'-8" FLAT
1 1/4" PL CHOCK (MA)
LONG'L BHD
WT 8 x 22.5# (AH)
WT 7 x 19# (AH)
CHOCK 1/2 PL N&F (MA)
TANK TOP

SECTION 8-B TYPICAL SIDE FRAME

PORT SHOWN LKG. AFT - STBD SIM TO OPP. HAND

SCALE: 3/8"=1'-0"


33'-3" OFF ℄
36 WF 150 (AH)
20"X 5" VENT HOLE (TYP)
5/8" PL (AH-K)
15/16" PL (DH)
W.T. BHD
5"X4" VENT HOLE (TYP)
BRKT 1/2" PL (MA)
1/2" PL BRKT (MA)
℄ SHIP
31'-4" FLAT
LONG'L BHD

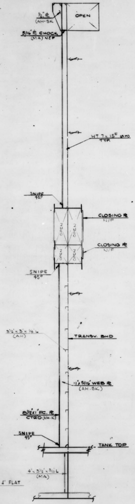
SECTION 8-A TYPICAL

HORIZONTAL STIFFENER

PORT SIDE SHOWN - STBD TO OPP HAND

SCALE: 3/8"=1'-0"

(4-A)

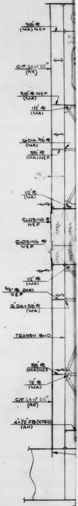

1/2" PL (AH-SK)
OPEN
5/16" PL CHOCK (MA) N&F
WT 7 x 15# (AH) TYP.
SNIPE 45°
CLOSING PL N/F
SNIPE 45°
3 1/2" x 3" x 1/4" L (AH)
TRANSV. BHD
11" x 5/16" WEB PL (AH-SK)
8 1/2" x 1" FC. PL CTRD (AH-K)
SNIPE 45°
TANK TOP
4" x 3 1/2" x 3/8" L (MA)

SECTION 6-A1 TYPICAL

TYPICAL VERTICAL BHD STIFFENER

SHOWN LOOKING TO PORT

SCALE: 3/8"=1'-0"


3/8" PL (MA) N&F
C/F 24 WF 55# (AH)
3/8" PL N&F
1/2" PL (MA)
6" DIA x 3/8" PL (MA)
3/8" PL (MA) N&F
1/2" PL (MA)
CLOSING PL N&F
CLOSING PL N&F
1/2" PL (MA)
3/8" PL (MA) N&F
6" DIA x 3/8" PL (MA)
TRANSV. BHD
3/8" PL (MA) N&F
1/2" PL (MA)
C/F 24 WF 55# (AH)
4" x 1/2" FB (CTRD) (AH)

SECTION 6

VERTICA

SHOWN

SCAL

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

BUILDERS PLAN NO. H-4650-111-10-38

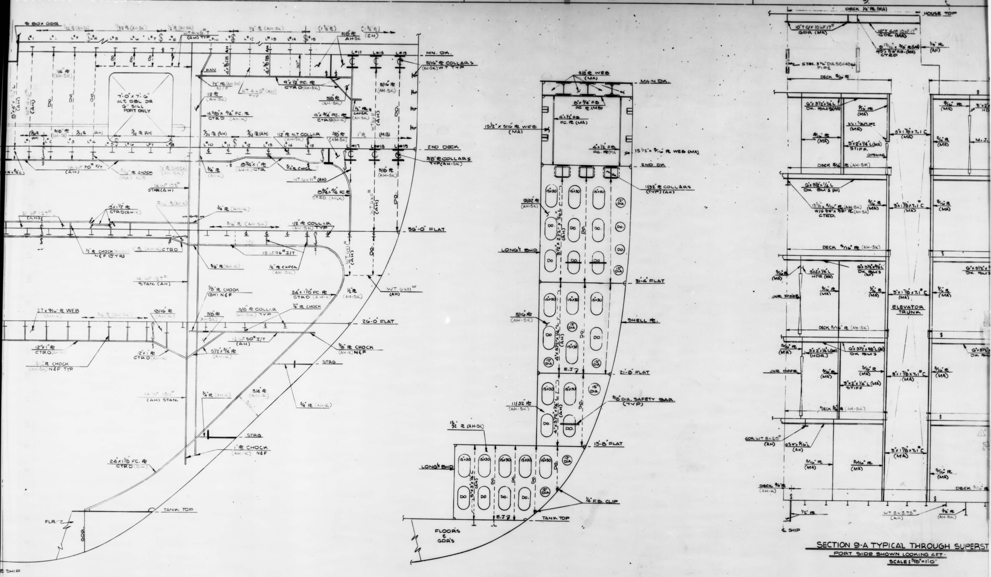
FRAME 3 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

BUILDERS PLAN NO. H-4650-111-10-38

FRAME 4 OF 5


12
11
10
9
MN. DK.
2ND DECK
36'-0" FLAT
26'-0" FLAT
TANK TOP
7'-0" x 7'-6" W.T. DBL DR 6" SILL PORT ONLY
5/16" ℞ COLLARS (AH-SK) W.T. TYP
3/8" ℞ COLLARS TYP (AH-SK)
1/2" ℞ COLLAR (AH-SK) TYP
27 x 9/16" ℞ WEB
24"x 1 1/8" FC. ℞ CTRD
1" ℞ CHOCK (AH-K) N&F
STRG
FLR.
GDR.
MAIN DK.
2ND DK
3/8" ℞ WEB (MA)
15 1/2" x 9/16" ℞ WEB (MA)
11/32" ℞ COLLARS (TYP) (AH)
LONG'L BHD
SHELL ℞.
31'-6" FLAT
21'-6" FLAT
13'-8" FLAT
3/8" DIA. SAFETY BAR (TYP)
1/2" F.B. CLIP
FLOORS & GDR'S
HOUSE TOP
DECK 1/4" ℞ (MA)
ELEVATOR TRUNK
JNR. DOOR
℄ SHIP

ENGINE ROOM - FRAME 170
SECTION 12-A TYPICAL WEB FRAME

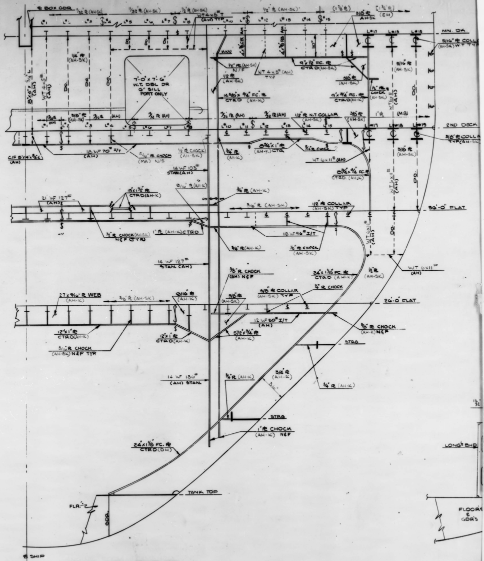
PORT SIDE SHOWN - LOOKING AFT - STBD SIM OPP HAND
SCALE: 3/8" = 1'-0"

SECTION 10-A TYPICAL WING TANK SWASH BHD

PORT SIDE SHOWN - LOOKING AFT - STB'D SIM OPP. HAND
SCALE: 3/8" = 1'-0"

SECTION 9-A TYPICAL THROUGH SUPERST

PORT SIDE SHOWN LOOKING AFT
SCALE: 3/8" = 1'-0"


℄ BOX GDR
11/32" PL (AH-SK)
1/2" PL (AH-SK)
WT 4x5# T (AH) TYP
(1 7/8" PL)
[1 3/4" PL] (EH)
3/8" PL AH-SK
MN. DK.
5/16" PL COLLAR (AH-SK) W.T. TYP
L#1 L#2 L#3 L#4 L#5 L#6 L#7 L#8 L#10 L#11 L#12 L#13 L#14 L#15 L#17 L#18 L#19
8" x 4" x 3/4" L (AH)
WT 4x5# (AH)
1/4" PL (AH-SK)
7'-0" x 7'-6" W.T. DBL DR 6" SILL PORT ONLY
KNU
4" x 3/8" F.B. AH
1/2" PL (AH-SK) N/F
WT 4 x 5# (AH) TYP
9" x 1/2" FC. PL CTRD (AH-SK)
1/2 PL (AH-SK)
3/8" PL (AH-SK)
1/2" PL CHOCK (AH-SK)
14 5/8" x 3/4" FC. PL CTRD (AH-K)
9" x 3/4" FC. PL CTRD (AH-K)
5/16" PL (AH-SK)
WT 6x11# (AH)
DO.
15/32" PL (AH)
3/8" PL (AH-SK)
5/32 PL (AH)
1/2" PL N.T. COLLAR (AH-SK)
1" PL (MB)
2ND DECK
3/8" PL COLLAR TYP (AH-SK)
C/F 8" x 4" x 5/8" L (AH)
18 WF 70# I/T (AH)
5/16" PL CHOCK (MA) N/S
1/2" PL CHOCK (AH-SK)
3/4" PL (AH-K)
8 3/4" x 1" PL (AH-K) CTR
5/16" PL CHOCK
WT 6x11# (AH)
8 3/4" x 3/4" FC. PL CTRD. (AH-K)
14 WF 103# STAN. (AH)
9/16" PL (AH-K)
3/4" PL (AH-K)
15" x 1 1/2" PL CTRD (AH-K)
21 WF 127# (AH)
3/8" PL (AH-SK)
1/2" PL COLLAR (AH-SK) TYP
36'-0" FLAT
1/2" PL CHOCK (AH-SK) N&F (TYP)
1" PL (AH-K) CTRD
18 WF 96# I/T
3/4" PL (AH-K)
1/2" PL CHOCK (AH-SK)
14 WF 127# STAN. (AH)
3/8" PL CHOCK (BH) N&F
24" x 1 1/8" FC. PL CTRD (AH-K)
1/2" PL (AH-SK)
WT 6x11# (AH)
27 x 9/16" PL WEB (AH-K)
9/16" PL (AH-K)
3/8" PL (AH-SK)
3/8" PL COLLAR (AH-SK) TYP
1/4" PL CHOCK
26'-0" FLAT
12 WF 50# I/T (AH)
5/8" PL CHOCK (AH-K) N&F
12" x 1" PL CTRD (AH-K)
5/16" PL CHOCK (AH-SK) N&F TYP
12" x 1" PL CTRD (AH-K)
5 1/2" x 3/4" PL (AH-K)
STRG
14 WF 136# (AH) STAN.
3/4" PL (AH-K)
3/4" PL (AH-K)
36"
3/4" PL (AH-K)
STRG
1" PL CHOCK (AH-K) N&F
24" x 1 1/8" FC. PL CTRD (DH)
TANK TOP
FLR.
GDR.
℄ SHIP
LONG'L BHD
FLOORS & GDR'S

ENGINE ROOM - FRAME 170

SECTION 12-A TYPICAL WEB FRAME

PORT SIDE SHOWN - LOOKING AFT - STBD SIM. OPP HAND

SCALE: 3/8" = 1'-0"

AUTOMATION INDUSTRIES, INC.
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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

BUILDERS PLAN NO. H-4650-111-10-38

FRAME 5 OF 5

8X

WINDLASS:
CAT TO LIFT TWO ANCHORS & CHAIN FROM 30 FATHOMS @ 30 F.P.M.,
FT ONE ANCHOR & CHAIN FROM 185 FATHOMS
TAN HEAD PROPORTIONED FOR 7" CIRC. HAWSERS, LINE SPEED & PULL 20,000# @ 35 F.P.M.

HANDLING:
BOOM: RATED HOOK LOAD 30 TONS, RATED SPREADER LOAD - 20 TONS
K SPEED @ RATED LOAD (30 TONS) 37 F.P.M.
WING SPEED @ RATED LOAD (30 TONS & SHIP LISTED 3 DEG.) ½ R.P.M.
PING SPEED @ RATED LOAD (30 TONS) 34.3 DEG/MIN. (1 MIN.-30 SEC TO TOP FROM 25° TO 75°)
M REACH MAX. PAST WIDEST BEAM OF SHIP 20 FT.
M REACH FROM CENTER OF TRUNION AT 25° MIN WORKING ANGLE 70 FEET.)
AT 75° MAX. BOOM ANGLE 22 FEET.
. DESIGN LIST CONDITION OF SHIP FOR CRANE OPERATION -10°

BOOM: RATED HOOK LOAD 70 TONS, RATED SPREADER LOAD - 30 TONS
STING DRUM LINE SPEED OF APPROX 125 FPM ON THIRD LAYER OF ROPE
PING DRUM LINE SPEED OF APPROX 100 FPM ON THIRD LAYER OF ROPE
OM REACH MAX PAST WIDEST BEAM OF SHIP IS 20 FEET.
OM REACH FROM CENTER OF BOOM STEP PEDESTAL:
AT 25° MIN. WORKING ANGLE - 75.67'
AT 75° MAX. TOPPING ANGLE - 21.6'
RATION OF 70 TON BOOM IS CAPABLE UNDER ALL COMBINATIONS OF
DITIONS UP TO AN ADVERSE LIST OF 10° AND 2° MAX TRIM.

RUSTER:
E POWER - 1000; PROPELLER R.P.M. - 294; PROP DIA. - 79 INCHES;
F BLADES - 4; MANEUVER TIME (FULL PORT TO FULL STBD) - 17 SEC.

LIFEBOATS: 30'x10'x4'-4" CERTIFIED FOR 55 PERSONS
(1) DIESEL PROPELLED (1) HAND POWERED

MASECO GRAVITY DAVITS: TYPE 30-22 MK III
MASECO WINCH: TYPE 55 G-MK IV

COMPLEMENT

OFFICERS AND CREW

MASTER	1
DECK DEPARTMENT	16
ENGINE DEPARTMENT	13
STEWARDS DEPARTMENT	9
CADETS	2
PASSENGERS	12
TOTAL	53
REPATRIATED OFFICERS (WHEN CARRIED)	2
TOTAL	55

GENERAL CHARACTERISTICS

LENGTH OVERALL	813'-3"
LENGTH BETWEEN PERPENDICULARS	769-0"
BEAM MOLDED	80'-0"
DEPTH TO MAIN DECK MIDSHIPS (MOLDED)	55'-0"
DEPTH TO SECOND DECK MIDSHIPS	44'-0"
SCANTLING AND SUBDIVISION DRAFT, (MOLDED)	33'-0"
GROSS TONNAGE (U.S.) APPROX.	31,430
NET TONNAGE (U.S.) APPROX.	28,640
LIGHT SHIP WEIGHT, APPROX.	15,010
TOTAL DEADWEIGHT SCANTLING DRAFT, APPROX.	27,340
TOTAL DISPLACEMENT SCANTLING DRAFT, APPROX.	42,350
SHAFT HORSEPOWER, NORMAL	26,000
SHAFT HORSEPOWER, MAXIMUM CONTINUOUS	28,800
PROPELLER (1) 6 BLADED	23'-6" DIA.

MAIN TURBO GENERATOR

CAPACITY K.W.	2500
CAPACITY K.V.A.	3125
VOLTS A.C.	450
PHASE & CYCLES	3-60
POWER FACTOR	0.80

SHIP SERVICE DIESEL GENERATOR

CAPACITY K.W.	2500
CAPACITY K.V.A.	3125
VOLTS A.C.	450
PHASE & CYCLES	3-60
POWER FACTOR	0.80

EMERGENCY DIESEL GENERATOR

CAPACITY K.W.	250
CAPACITY K.V.A.	312
VOLTS A.C.	450
PHASE & CYCLES	3-60
POWER FACTOR	0.80

STEERING GEAR (ELECTRO-HYDRAULIC) SINGLE RAM, TWO CYLINDERS RAPSON SLIDE, W/ TWO 75 H.P. HYD PUMP UNIT ASSEMBLIES.

DATA SHEET | SHT 2 OF 15

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	1-24-77	ALL	1. PLAN REVISED THROUGHOUT TO SUIT G.G. SHARP COMMENT DATED NOV. 9, 1977 - FILE 3587-31-3. 2. ON DECK CONTAINER GUIDES - NO. 8 HOLD REVISED. 3. ANTENNAS ON HOUSE TOP REVISED. 4. RIGGING ARRGT. FWD. REVISED TO SUIT WORKING PLANS. 5. HATCH RAILS ON FOC'SLE DECK CHANGED FROM PORTABLE TO FIXED.	CDS.	JLM MHT
2	8-8-80		1. TYPE OF LIFEBOAT DAVITS & WINCHES REVISED. 2. STACKER FITTING STOWAGE BOXES REVISED. 3. HATCH RAILS ON FOC'SLE DECK REVISED 4. MIDSHIP SECTION & CROSS SECTIONS ADDED. 5. SHELL EXPANSION ADDED. 6. SECTIONS THRU CONTAINER CELLS ADDED. 7. FURNITURE & SHELVING INDICATED. 8. EXPANDED METAL BULKHEADS IN CO₂ ROOM REVISED. 9. FWD. AND AFT MASTHEAD LIGHTS RELOCATED. 10. STORM RAILS IN 2ND DECK PASSAGEWAY RELOCATED FROM SHELL TO INBD. LONG'L BHD. 11. A.R.D.F. RELOCATED FROM THE RADAR MAST TO THE HOUSE TOP. 12. SWING OF DOOR TO CO₂ ROOM REVISED. 13. ANTENNAS REVISED. 14. TANK CAPACITY TABLES REVISED TO SUIT TANK SCALES. 15. FAIRLEADS ON MAIN DECK FWD. RELOCATED. 16. PORTABLE RAMP - FR. 45 P/S CHANGED TO FIXED STEP. 17. LADDER FROM SUN DECK TO BRIDGE DECK - STBD - RELOCATED. 18. NOT UNDER COMMAND LTS. RELOCATED. 19. SWING OF DOORS INTO MAIN DK. SPACE FWD. AT FR. 45 REVERSED. 20. PILOTS GATE RELOCATED.	CDS	8/1/80 JLM

RESERVATIONS -
~~1- MIDSHIP SECTION & CROSS SECTIONS~~
~~2- SHELL EXPANSION~~
~~3- SECTIONS THRU CONTAINER CELLS~~
~~4- LIGHTS AND ANTENNAS~~
~~5- FURNITURE INDICATIONS~~

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 270

	DATE OF ISSUE			
	ALTERATION	–	–	–	1S
	ENGINEERING DISTRIBUTION	9/29/7	10/17/7	10/17/7	8/13/80
MAIL	OWNERS		4		2
MAIL	AMERICAN BUREAU		3		3
MAIL	LLOYD'S R.S.				
MAIL	U.S.M.A.		2		1
MAIL	U.S. NAVY				
MAIL	U.S.C.G.				
MAIL	JOINER CONT'R.				
MAIL	USPH		3		3
INSPECTION	OWNER'S INSP.		1		
INSPECTION	AM. BU. INSP.				1
INSPECTION	LLOYD'S INSP.				
INSPECTION	U.S.M.A. INSP.		1		
INSPECTION	U.S. NAVY INSP.				
INSPECTION	U.S.C.G. INSP.				1
INSPECTION	CD Schaub			18	1
OFFICE	HULL DRAFT. - 21			18	1
OFFICE	MACH. DRAFT. - 22			20	2
OFFICE	ELEC. DRAFT. - 23			18	1
OFFICE	OUTFIT. DRAFT. - 25				
OFFICE	ESTIMATING				
OFFICE	21-1D Warwood	28		18	1
MISC.	PRODUCTION (SCD)				
MISC.	ORDER DEPT.				
MISC.	JOINER CONT. YARD				
MISC.					
	TOTAL ENG'R. DIST.	2	14	6	17
	YARD DISTRIBUTION	/	/	10/17/7	8/17/80
YARD	GPM				
YARD					
YARD	PIECE RATE - 11				1
YARD	TEST DEPARTMENT				
YARD	Ship Sup				1
YARD	PLANNING			18	1
STRUCTURAL	GROUND ASSEMBLY				4
STRUCTURAL	35 Dept				2
STRUCTURAL	McNair				1
STRUCTURAL	H. Levy				1
STRUCTURAL	NO. ~~WAY~~ UAD				1
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	NO. WAY				
STRUCTURAL	STRUCT. SUPER.				2
STRUCTURAL	OPTICAL DETAIL - 45				2
STRUCTURAL	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER				1
MACH'Y & OUTFIT.	PIPE DRAFT. - 52				2
MACH'Y & OUTFIT.	BOILER SHOP - 58				1
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60				1
MACH'Y & OUTFIT.	[illegible]				1
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70				
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74				
MACH'Y & OUTFIT.	COPPER SHOP - 51				
MACH'Y & OUTFIT.	PAINT SHOP - 78				1
OTHER	WELDING				
OTHER					
OTHER	MOLD LOFT - 41				1
OTHER	BRACKET SHOP				
OTHER	G-Mat'l				1
OTHER					
OTHER					
	TOTAL YARD DIST.	/	/	4	35

INDEX

DESCRIPTION
LE, ISSUE, INDEX, ALTERATIONS, RESERVATIONS
NERAL CHARACTERISTICS
TBD PROFILE
BOARD PROFILE
PER DK, BOAT DK, CABIN DK, SUN DK, BRIDGE DK, BRIDGE HSE TOP
IN DECK
COND DECK
SCELLANEOUS DECKS
SCELLANEOUS FLATS
-8" FLAT
NK TOP
NERBOTTOM
CTIONS THRU CONTAINER BAYS
DSHIP AND CROSS SECTIONS
HELL EXPANSION

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/16" = 1'-0"
DATE 17 OCTOBER 1977
DRAWN C/B-S
IN CHARGE
CHECKED
EXAMINED
REVIEWED WAW/TPB
APPROVED

PLAN NO. H4650-111-11-01
ALT. NO. 1st

· BOOKLET OF GENERAL PLANS ·

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-9-77				
A.B.S.	INFO. ONLY				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.	11-4-77				

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/16" = 1'-0"
DATE 17 OCTOBER 1977
DRAWN C/B-S
IN CHARGE
CHECKED
EXAMINED J. L. Mullin
REVIEWED WAW/TPB
APPROVED

PLAN NO. H4650-111-11-01
ALT. NO. 2nd

· BOOKLET OF GENERAL PLANS ·

	APPROVAL LETTERS				
HULL.	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-9-77				
A.B.S.	INFO ONLY				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.	11-4-77				

KEY PLAN

1

H-39

60.0 SQ. FT.

Sched Submit 5-16-7

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

BUILDERS PLAN NO. H-4650-111-11-01

FRAME 1 OF 11

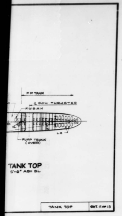


TABLE OF TANK CAPACITIES

F.O. TANKS	BRLS (98%)
DEEP TANK Nº 1 P/S	809
DEEP TANK Nº 2 P/S	2786
DEEP TANK Nº 3 P/S	2323
DEEP TANK Nº 4 P/S	2921
DEEP TANK Nº 5 P/S	2709
DEEP TANK Nº 6 P/S	2331
DEEP TANK Nº 7 P/S	1914
DEEP TANK Nº 8 P/S	2901
DEEP TANK Nº 9 P/S	765
DEEP TANK Nº 10 P/S	1127
DEEP TANK Nº 10A P/S	1200
DEEP TANK Nº 10B P/S	1205
DEEP TANK Nº 12 P/S	1186
DEEP TANK Nº 13 P/S	1104
DEEP TANK Nº 14 P/S	769
DEEP TANK Nº 15 P/S	2927
DEEP TANK Nº 16 P/S LOWER SERVICE (SETT. TKS)	902
DEEP TANK Nº 16 P/S UPPER SERVICE (SETT. TKS)	1050
TOTAL =	30,926

TOTAL OF BOTH TANKS

S.W. BALLAST TKS.	L. TONS (100%)
FORE PEAK TANK	161.7
D.B. TANK Nº 1	128.5
Nº 2 P/S	139.8
Nº 3 ℄	132.0
Nº 3 P/S	97.6
Nº 4 INBD P/S	189.4
Nº 4 OUTBD P/S	116.0
Nº 5 INBD P/S	195.6
Nº 5 OUTBD P/S	292.0
Nº 5A INBD P/S	178.3
Nº 5A OUTBD P/S	308.4
Nº 5B INBD P/S	184.6
Nº 5B OUTBD P/S	308.2
Nº 5C INBD P/S	178.3
Nº 5C OUTBD P/S	308.2
Nº 6 INBD P/S	195.6
Nº 6 OUTBD P/S	305.3
Nº 7 INBD P/S	178.3
Nº 7 OUTBD P/S	289.6
Nº 8 ℄	52.0
Nº 8 P/S	224.9
HEELING TANK Nº 10 C P/S	394.5
Nº 10 D P/S	394.5
DEEP TANK Nº 17 P/S	249.5
AFT PEAK TANK	296.1
TOTAL =	5408.9

TOTAL OF BOTH TANKS

LIQUID CARGO TKS.	BRLS (98%)
CARGO OIL TK. Nº 1	777
CARGO OIL TK Nº 2	1477
CARGO OIL TK Nº 3	744
TOTAL =	2998

DIESEL OIL TKS	GALLONS (98%)
D.O. TANK Nº 11 P/S	50610
D.O. DBL. BOT. FRS 176-184 P/S	14928
TOTAL =	65538

TOTAL - BOTH TKS.

FRESH WATER TKS	L. TONS (100%)
ANTI-ROLL UPPER	209
ANTI-ROLL LOWER	169
STAB DUMP (P)	114
STAB DUMP (S)	114
POTABLE WATER P/S	116
DISTILLED WATER P/S	210
TOTAL =	932

TOTAL OF BOTH TANKS

SUMMARY OF CONTAINER CAPACITY

HOLD Nº	BAY Nº	BELOW DECK			COCOONS		WEATHER DECK				SUMMARY (BELOW & WEATHER DECK)				SUMMARY (BELOW & WEATHER DECK)			
							MAX. 20' CONT'RS CARRIED		MAX. 40' CONTRS CARRIED		MAX. 20' CONTAINERS CARRIED				MAX. 40' CONTAINERS CARRIED			
		20' CONTS		40' CONTS	20' CONTS		20' CONTS	40' CONTS	20' CONTS	40' CONTS	20' INSUL	20' DRY		40' DRY	20' INSUL	20' DRY		40' DRY
		8'-0"	8'-6"	8'-6"	8'-0"	8'-6"	8'-6"	8'-6"	8'-6"	8'-6"		8'-0"	8'-6"	8'-6"		8'-0"	8'-6"	8'-6"
1	1 2	— 4	14 16	— —	— —	— —	— 6	— —	— 6	— —	—	4	36	—	—	4	36	—
*2	3 4	— —	24 26	OR 24	— —	— —	16 16	— —	— —	16	—	—	84	—	—	—	4	40
*3	5 6	— —	36 42	OR 36	— —	— —	20 20	— —	— —	20	—	—	118	—	—	—	6	56
*4	7 8	— —	46 46	OR 46	— —	— —	20 20	— —	— —	20	—	—	132	—	—	—	—	66
5	9 10	8 8	40 40	— —	— —	16 16	10 10	— —	— —	10	128	—	20	—	128	—	—	10
5-A	11 12	— —	48 48	— —	— —	16 16	10 10	— —	— —	10	128	—	20	—	128	—	—	10
5-B	13 14	48 48	— —	— —	— —	16 16	10 10	10	— —	20	128	—	20	10	128	—	—	20
5-C	15 16	— —	48 48	— —	— —	16 16	10 10	10	— —	20	128	—	20	10	128	—	—	20
6	17 18	— —	48 48	— —	— —	16 16	10 10	10	— —	20	128	—	20	10	128	—	—	20
7	19 20	— —	48 48	— —	— —	16 16	10 10	10	— —	20	128	—	20	10	128	—	—	20
*8	21 22	— —	46 46	OR 46	— —	— —	8 8	30	— —	38	—	—	108	30	—	—	—	84
9	23 24	6 —	— —	22	— —	— —	— —	30	— —	30	—	6	—	52	—	6	—	52
9 AFT	25 26	— —	20 —	— —	— —	— —	8 —	30	8 —	30	—	—	28	30	—	—	28	30
TOTALS		122	826	174	0	192	262	130	14	254	768	10	626	152	768	10	74	428

MAX. 20' CONTAINERS CARRIED	MAX. 40' CONTAINERS CARRIED
636	84
20' CONT. CAPACITY = 1404	20' CONT. CAPACITY = 852
40' CONT. CAPACITY = 152	40' CONT. CAPACITY = 428
TEU = 1708	TEU = 1708

* - THESE HOLDS FITTED WITH PORTABLE MIDHOLD GUIDES THAT PERMIT CONVERTING THEM FOR THE STOWAGE OF EITHER 20' OR 40' CONTAINERS.

NOTE: TEU (20 FT EQUIVALENT UNITS)

ANCHOR WINDLASS:

WILDCAT TO LIFT TWO ANCHORS & CHAIN FROM 50 FATHOMS @ 30
TO LIFT ONE ANCHOR & CHAIN FROM 125 FATHOMS
CAPSTAN HEAD PROPORTIONED FOR 7" CIRC HAWSERS, LINE SPEED @

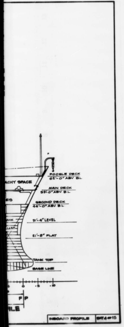
CARGO HANDLING:

FWD BOOM: RATED HOOK LOAD 30 TONS, RATED SPREADER LO
HOOK SPEED @ RATED LOAD (30 TONS) 37 F.P.M.
SLEWING SPEED @ RATED LOAD (30 TONS & SHIP LISTED 5 DEG) [illegible]
TOPPING SPEED @ RATED LOAD (30 TONS) 34.5 [illegible] MIN-30 SEC [illegible]
BOOM REACH MAX. PAST WIDEST BEAM OF SHIP 20 FT.
BOOM REACH FROM CENTER OF TRUNION AT 25° MIN WORKING ANGL
AT 75° MAX. BOOM ANGLE
MAX. DESIGN LIST CONDITION OF SHIP FOR CRANE OPERATION-10°

AFT BOOM: RATED HOOK LOAD 70 TONS, RATED SPREADER LOA
HOISTING DRUM LINE SPEED OF APPROX 125 FPM ON THIRD LA
TOPPING DRUM LINE SPEED OF APPROX 100 FPM ON THIRD LAYER
BOOM REACH MAX PAST WIDEST BEAM OF SHIP IS 20 FEET.
BOOM REACH FROM CENTER OF BOOM STEP PEDESTAL:
AT 25° MIN. WORKING ANGLE - 75.67'
AT 75° MAX. TOPPING ANGLE - 21.6'
OPERATION OF 70 TON BOOM IS CAPABLE UNDER ALL COMBIN
CONDITIONS UP TO AN ADVERSE LIST OF 10° AND 2° MAX TRIM

BOWTHRUSTER:

HORSE POWER - 1000; PROPELLER RPM. - 294; PROP
Nº OF BLADES - 4; MANEUVER TIME (FULL PORT TO FULL STBD)



REFERENCES (CONT'D)

Nº	TITLE	DWG. Nº
32		
33		
34		
35		
36		
37		
38		
39		
40		

ALTERATIONS (CONT'D)

REV.	ZONE	DESCRIPTION	BETH. DATE	BETH. APPD	OWNER DATE	OWNER APPD

GROSS AREA SQ. FT.

ALTERATIONS

REV.	ZONE	DESCRIPTION	BETH. DATE	BETH. APPD	OWNER DATE	OWNER APPD
1.	ALL	1. PLAN REVISED THROUGHOUT TO SUIT G.G. SHARP COMMENTS DATED NOV. 9, 1977-FILE 5587-51-3 2. ON DK. CONTAINER GUIDES, NO. 8 HOLD REV. 3. ANTENNA ON HOUSETOP REVISED. 4. RIGGING ARRGT. FWD. REVISED TO SUIT WORKING PLAN. 5. HATCH RAILS ON FOC'SLE DK. CHGD. FROM PORTABLE TO FIXED.	1-24-77			
		1. TYPE OF LIFEBOAT DAVITS AND WINCHES REVISED. 2. STACKER FITTINGS STOWAGE BOXES REVISED. 3. HATCH RAILS ON FOC'SLE DK. REVISED. 4. MIDSHIP SECTION & CROSS SECTIONS ADDED. 5. SHELL EXPANSION ADDED. 6. SECTIONS THRU CONTAINER CELLS ADDED. 7. FURNITURE & SHELVING INDICATED. 8. EXPANDED METAL BULKHEADS IN CO_2 ROOM REVISED. 9. FWD. AND AFT MAST HEAD LT. RELOCATED 10. STORM RAILS IN 2ND DECK PASSAGEWAY RELOCATED FROM SHELL TO INBOARD LONG'L BHD. 11. A.R.D.F. RELOCATED FROM RADAR MAST TO HOUSE TOP. 12. SWING OF DOOR TO CO_2 RM. REVISED. 13. ANTENNAS REVISED 14. TABLE OF CAPACITIES REVISED TO SUIT TANK SCALES. 15. FAIRLEADS ON MAIN DK. FWD. RELOCATED. 16. PORTABLE RAMP, FR. 45 P/S CHGD. TO FIXED STEP. 17. LADDER FROM SUN DECK TO BRIDGE DECK-STBD-RELOCTED. 18. NOT UNDER COMMAND LTS. RELOCATED 19. SWING OF DOORS INTO MAIN DK. SPACE-FR. 45- REVERSED. 20. PILOT'S GATE RELOCATED.				

REFERENCES

NO.	TITLE	DRAWING NUMBER
1		
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31		

INDEX

SHEET NO.	DESCRIPTION
1	TITLE, ISSUE, INDEX, ALTERATIONS, RESERVATIONS
2	GENERAL CHARACTERISTICS
3	OUTBD PROFILE
4	INBOARD PROFILE
5	UPPER DK, BOAT DK, CABIN DK, GUN DK, BRIDGE DK, BRIDGE HSE TOP
6	MAIN DECK
7	SECOND DECK
8	MISCELLANEOUS DECKS
9	MISCELLANEOUS FLATS
10	13'-8" FLAT
11	TANK TOP
12	INNERBOTTOM
13	SECTIONS THRU CONTAINER BAYS
14	MIDSHIP AND CROSS SECTIONS
15	SHELL EXPANSION
16	
17	
18	
19	
20	
21	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

BUILDERS PLAN NO. H-4650-111-11-01

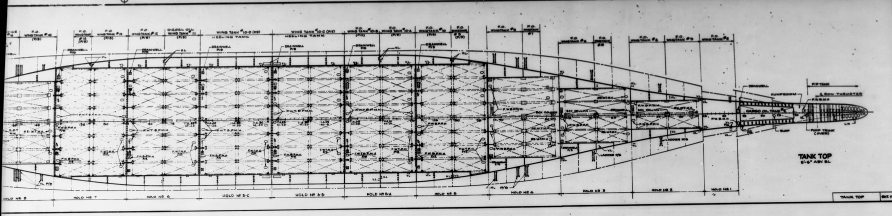
FRAME 2 OF 11

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

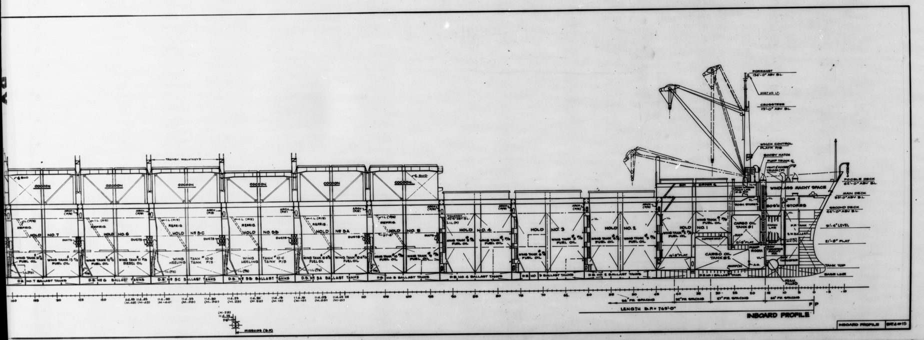
Sep 1980

BUILDERS PLAN NO. H-4650-111-11-01

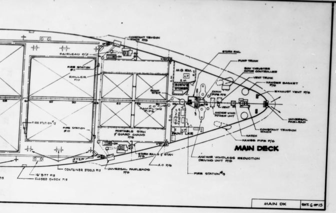
FRAME 3 OF 11

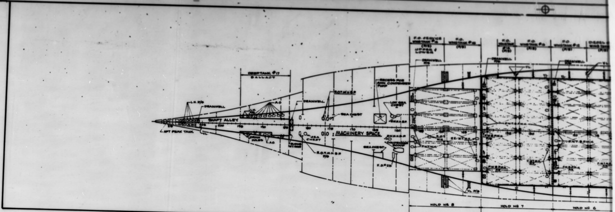


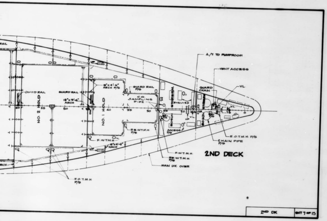
F.O. WING TANK #12
F.O. WING TANK #13
F.O. WING TANK #12
DIESEL OIL WING TANK 11
WING TANK #10-C (P/S) HEELING TANK
WING TANK #10-D (P/S)
F.O. WING TANK #10-B
F.O. WING TANK #10-A
F.O. WING TANK #10
DRAINWELL
V.L.
F.W.B.M.H.
F.W.T.M.H.
BOX COLUMN
LADDER P/S
CARGO OIL TANK #2
PUMPROOM
F.P. TANK
℄ BOW THRUSTER
SUMP
PUMP TRUNK (OVER)
L.H.
HOLD NO 8
HOLD NO 7
HOLD NO 6
HOLD NO 5-C
HOLD NO 5-B
HOLD NO 5-A
HOLD NO 5
HOLD NO 4
HOLD NO 3
HOLD NO 2
HOLD NO 1
TANK TOP
5'-6" ABV. BL.
TANK TOP
SHT. 11 OF 15

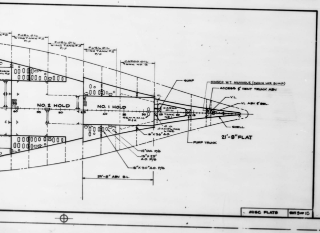


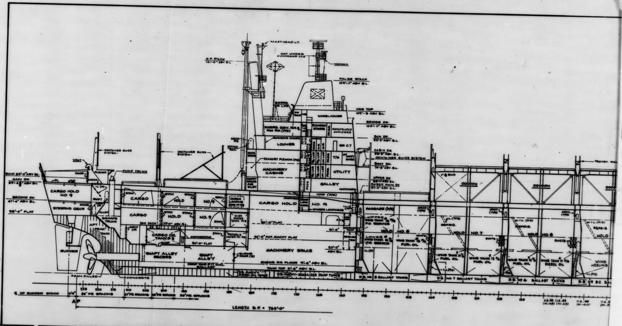
TRANSV. WALKWAYS
COCOON
HOLD NO. 7
HOLD NO. 6
HOLD NO 5C
HOLD NO 5B
HOLD NO 5A
HOLD NO. 5
HOLD NO. 4
HOLD NO. 3
HOLD NO. 2
HOLD NO. 1
REFRIG.
DUCTS
ARCH (P/S)
WING TANK 11 P/S DIESEL OIL
WING HEELING TANK 10-D P/S
WING HEELING TANK 10-C P/S
WING TANK #2 P/S FUEL OIL
WING TANK #1 P/S FUEL OIL
CARGO OIL TANK #1
CARGO OIL TANK #2
COFFER DAM
PUMP ROOM
BOW THRUSTER MACHY RM
BOW THRUSTER
FOAM FILLED
CHAIN LKR
F.P. TANK
S.W. BALLAST
BOS'N STORES
WINDLASS MACHY SPACE
FOREMAST 134'-0" ABV. B.L.
MAST HD. LT.
CROSSTREE 113'-0" ABV. B.L.
WINCH CONTROL PLATF. P/S
BOOBY HATCH
PUMP TRUNK ℄
VENT & ACCESS TRUNK (P)
FOCSLE DECK 62'-0" ABV. B.L.
MAIN DECK 53'-0" ABV. B.L.
SECOND DECK 44'-0" ABV. B.L.
31'-4" LEVEL
21'-8" FLAT
13'-8" FLAT
TANK TOP
BASE LINE
D.B. NO. 7 BALLAST TANKS
D.B. NO 6 BALLAST TANKS
D.B. NO 5C BALLAST TANKS
D.B. NO 5B BALLAST TANKS
D.B. NO 5A BALLAST TANKS
D.B. NO. 5 BALLAST TANKS
D.B. NO. 4 BALLAST TANKS
D.B. NO. 3 BALLAST TANKS
D.B. NO. 2 BALLAST TANKS
D.B. NO. 1 BALLAST TANK
36" FR. SPACING
32" FR. SPACING
27" FR. SPACING
26" FR. SPACING
LENGTH B.P. = 769'-0"
F.P.
MIDSHIPS (B.P.)
INBOARD PROFILE
INBOARD PROFILE
SHT. 4 OF 15


CONSTANT TENSION WINCH P/S
FAIRLEAD P/S
FIRE STATION #11
ROLLER P/S
FIRE STATION #12
FIRE STATION #10
PORTABLE STAN & GUARD CHAINS P/S
C.O. SAMPLING PIPE
STORM RAIL
PUMP TRUNK
BOW THRUSTER MOTOR CONTROLLER
VENT TRUNK
HAWSER BASKET P/S
EXHAUST VENT P/S
UNIVERSAL FAIRLEAD
ANCHOR WIND POWER UNIT
CONSTANT TENSION WINCH
HATCH
HAWSE PIPE P/S
PAINT LKR
STORM RAILS & STAN
A.O. P/S
ANCHOR WINDLASS REDUCTION DRIVING UNIT P/S
FIRE STATION #9
MAIN DECK
16" BITT P/S
CLOSED CHOCK P/S
CONTAINER STOOLS P/S
UNIVERSAL FAIRLEADS P/S
MAIN DK
SHT 6 OF 15


DEEPTANK #17 BALLAST
L.H. P/S
DRAINWELL
SHAFT ALLEY
AFT PEAK TANK
MACHINERY SPACE
SEA CHEST
R.O.T.M.H.S.F.
HOLD NO 8
HOLD NO 7
HOLD NO 6


A/T TO PUMPROOM
VENT ACCESS
GUARD RAIL
GUARD CHAIN
VL
NO. 2 HOLD
NO. 1 HOLD
C.O. SAMPLING PIPE
SHELVES
ACCESS P/S
R.O.T.M.H. P/S
CHAIN PIPE
F.W.T.M.H.
R.W.T.M.H.
MAIN DK OVER
F.O.T.M.H
2ND DECK
2ND DK
SHT 7 OF 15


FUEL OIL WING TANK #4 P/S
FUEL OIL WING TANK #3 P/S
FUEL OIL WING TANK #2 P/S
CARGO OIL TANK NO. 2
SUMP
HINGED W.T. MANHOLE (CHAIN LKR SUMP)
ACCESS & VENT TRUNK ABV.
VL
VL ABV 2ND DK.
NO. 2 HOLD
NO. 1 HOLD
CARGO OIL TANK NO. 1
C.O. SAMPLING LINE
SHELL
PUMP TRUNK
21'-8" FLAT
12" DIA P/S
18" X 23" A.O. P/S
18" X 30" A.O. P/S
29'-8" ABV BL.
MISC PLATS
SHT 8 OF 15


MASTHEAD LT.
NOT UNDER COMMAND LTS.
H.P. STACK 141'-0" ABV B.L.
FALSE STACK 129'-1" ABV BL.
WHEELHOUSE
NAV BRIDGE DK 109'-5" ABV BL.
BRIDGE DK. 100'-11" ABV BL.
SUN DK. 92'-5" ABV BL.
CABIN DK 83'-5" ABV B.L. CONTAINER GUIDE SYSTEM
BOAT DK. 74'-5" ABV BL.
UPPER DK 65'-11" ABV BL. RAISED MAIN DK 57'-5" ABV BL.
CONTAINER GUIDE SYSTEM
LOUNGE
EXHAUST PLENUM (P/S)
MACHINERY CASING
UTILITY
GALLEY
VENT
PUMP TRUNK
MAIN DK. 49'-4" ABV BL.
SECOND DK. 47'-4" ABV BL.
38'-0" FLAT
CARGO HOLD NO. 9
STEERING GEAR
CARGO
HOLD
NO. 9
CARGO HOLD NO. 9
AFT PEAK TANK
ESCAPE TRUNK
CARGO OIL TANKS
COFFERDAM
SHAFT ALLEY RECESS
SHAFT ALLEY
MACHINERY SPACE
ENGINE RM FLOOR
TANK TOP
RUDDER
FOAM FILLED
CONCRETE
PASSAGE (P/S)
UPPER WING TANK F.O. SERVICE
LOWER WING TANK F.O. SERVICE
HOLD NO. 8
HOLD NO. 7
HOLD NO. 6
WING TANK FUEL OIL
WING TANK DIESEL OIL
WING HEELING
REFRIG.
COCOON
DUCTS
D.B. NO 8 BALLAST TANKS
D.B. NO 7 BALLAST TANKS
D.B. NO 6 BALLAST TANKS
TRANSV. WALL
℄ OF RUDDER STOCK
AP
LENGTH B.P. = 769'-0"

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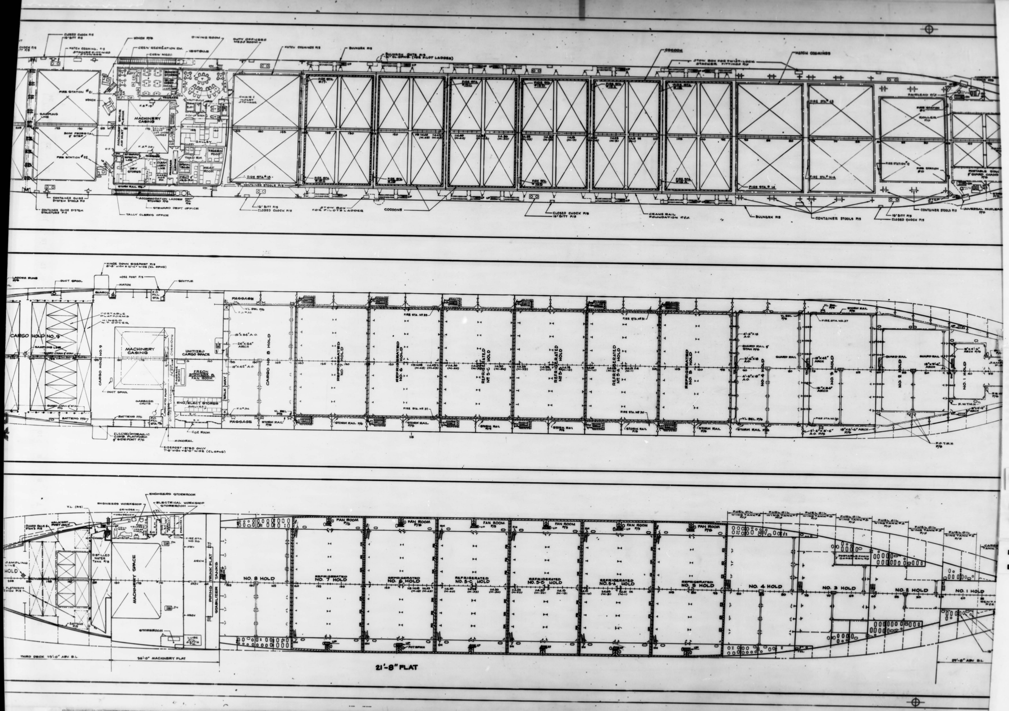
FRAME 4 OF 11


DINING ROOM
DUTY OFFICERS MESS ROOM
CREW RECREATION RM.
CREW MESS
VESTIBULE
MACHINERY CASING
GALLEY
THAW RM.
DRY STORES
FIRE STATION #21
FIRE STATION #22
SAMPLING LINE
HATCH COAMINGS P/S
BULWARK P/S
COCOON
COCOONS
CONTAINER STOOLS P/S
CONTAINER GUIDE SYSTEM STOOLS P/S
ACCOMMODATION LADDER STOWED P/S
STEWARD DEPT OFFICE
TALLY CLERKS OFFICE
STOW BOX FOR PILOTS LADDER
CRANE RAIL FOUNDATION
CLOSED CHOCK P/S
16" BITT P/S
CARGO HOLD NO. 9
MACHINERY CASING
UNITIZED CARGO SPACE
FREON STOWAGE & FAN ROOM
ENG/ELECT STORES
CARGO NO. 8 HOLD
REFRIGERATED NO. 7 HOLD
REFRIGERATED NO. 6 HOLD
REFRIGERATED NO. 5-C HOLD
REFRIGERATED NO. 5-D HOLD
REFRIGERATED NO. 5-A HOLD
REFRIGERATED NO. 5 HOLD
NO. 4 HOLD
NO. 3 HOLD
NO. 2 HOLD
NO. 1 HOLD
PASSAGE
STORM RAIL P/S
GUARD RAIL
ENGINEERS STOREROOM
ELECTRICAL WORKSHOP
STOREROOM
ENGINEERS WORKSHOP
DISTILLED WATER TANK P/S
MACHINERY SPACE
STABILIZER TANKS
PIPING TRUNK FLAT
NO. 8 HOLD
REFRIGERATED NO. 7 HOLD
REFRIGERATED NO. 6 HOLD
REFRIGERATED NO. 5-C HOLD
REFRIGERATED NO. 5-D HOLD
REFRIGERATED NO. 5-A HOLD
REFRIGERATED NO. 5 HOLD
NO. 4 HOLD
NO. 3 HOLD
NO. 2 HOLD
NO. 1 HOLD
FAN ROOM P/S
FUEL OIL WING TANK
THIRD DECK 33'-0" ABV B.L.
36'-0" MACHINERY FLAT
21'-8" FLAT
29'-8" ABV B.L.

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AUTOMATION INDUSTRIES, INC.
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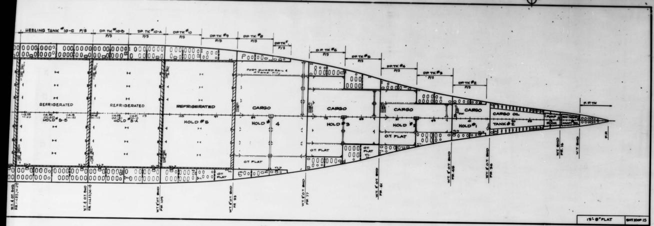
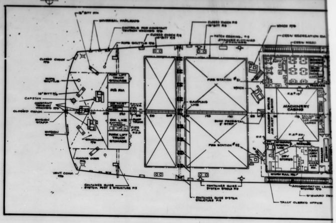
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

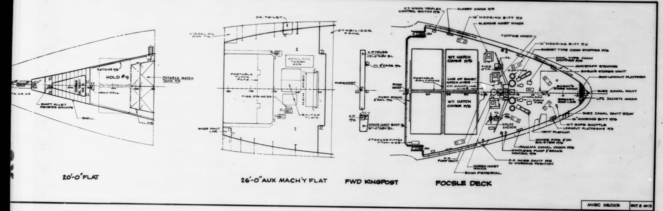
Sep 1980

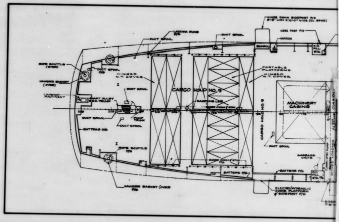
BUILDERS PLAN NO. H-4650-111-11-01

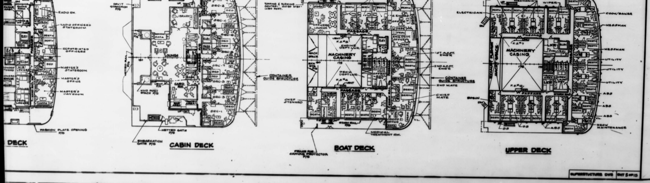
FRAME 6 OF 11

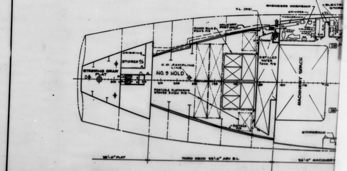

HEELING TANK #10-C P/S
DP TK #10-B P/S
DP TK #10-A P/S
DP TK #10 P/S
DP TK #9 P/S
DP TK #8 P/S
DP TK #7 P/S
DP TK #6 P/S
DP TK #5 P/S
DP TK #4 P/S
DP TK #3 P/S
DP TK #2 P/S
REFRIGERATED
HOLD #5-B
HOLD #5-A
HOLD #5
CARGO
HOLD #4
HOLD #3
HOLD #2
HOLD #1
CARGO OIL TANK #1
O.T. FLAT
F.P. TK
W.T. BHD
W.T. & O.T. BHD
13'-8" FLAT
SHT 10 OF 15

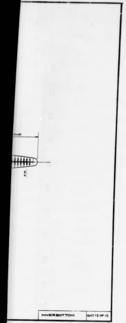

UNIVERSAL FAIRLEADS
CLOSED CHOCK P/S
ROPE SCUTTLE P/S
CAPSTAN
CONSTANT TENSION WINCHES P/S
CLOSED CHOCK
ENSIGN STAFF
FORK LIFT TRUCK STOWAGE
FIRE STATION #21
FIRE STATION #22
SAMPLING LINE
MACHINERY CASING
WINCH
HATCH COAMING
VENT COAM. P/S
CONTAINER GUIDE SYSTEM POST & STRUCTURE P/S
CONTAINER GUIDE SYSTEM STOOLS P/S
CONTAINER GUIDE SYSTEM STRUCTURE P/S
CREW RECREATION RM.
CREW MESS
DRY STORES
ACCOMMODATION LADDER STOWED P/S
STEWARD DEPT.
TALLY CLERKS OFFICE

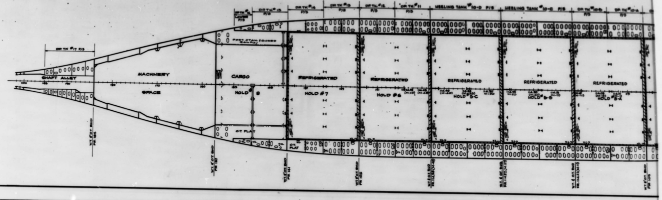

HOLD #9
POTABLE WATER TANK P/S
SHAFT ALLEY RECESS ESCAPE
SHELL
BATTENS P/S
DRAIN WELL
DIESEL OIL DAY TK.
DK. TOILET
STABILIZER TANK
POTABLE FLOOD PLT'S
FIRE STA. NO. 24
BOLTED PLATE
FOREMAST
K.P. TRUSS
BOOM REST
FIXED STANS.
WINCH CONT. PLATF.
STACKER FITTGS STOWAGE
C.T. WINCH TRIPLEX CONTROL SWITCH P/S
CLOSED CHOCK P/S
10" MOORING BITT P/S
SLEWING HOIST WINCH
TOPPING WINCH
W.T. HATCH COVER P/S
PORTABLE RAILS/STANS.
LINE OF BOOBY HATCH OVER
C.O. SAMPLING LINE
CAPSTAN
WINDLASS
CHAIN PIPE
SPARE ANCHOR
JACKSTAFF STOWAGE
BOSUN'S STORES DAVIT
BOW LOOKOUT PLATFORM
SUEZ CANAL DAVIT
LIFE JACKETS UNDER
SUEZ CANAL DAVIT STOW
16" MOORING BITT P/S
W.T. ROPE SCUTTLE
LOOKOUT PLATFORMS P/S
VENT PLENUM
HAWSE PIPE & DK BOLSTER P/S
PANAMA CANAL CHOCK P/S
WINDLASS PUMP & BRAKE CONTROL P/S
C.O. HOSE DAVIT P/S IN WORKING POSITION
CARGO HOIST WINCH
BOOM PEDESTAL
C.O. PUMP DAVIT
20'-0" FLAT
26'-0" AUX MACH'Y FLAT
FWD KINGPOST
FOCSLE DECK
MISC DECKS
SHT 8 OF 15

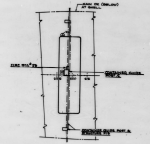

HINGE DOWN SIDEPORT P/S
HOSE PORT P/S
HATCH
LADDER RUNG P/S
DUCT SPOOL
ROPE SCUTTLE (OVER)
HAWSER BASKET (OVER)
CAPSTAN MACHINERY
SHAFT ALLEY ESC. TRUNK
PUMP TRUNK
CARGO HOLD NO. 9
HINGED W.T. COVER
PORTABLE PLATFORMS
MACHINERY CASING
GARBAGE CHUTE
BATTENS P/S
ROPE SCUTTLE P/S
HAWSER BASKET (OVER)
ELECTRO/HYDRAULIC CONS. PLATFORM & SIDEPORT P/S


15 MAN INFLATABLE LIFE RAFT P/S
FIXED WINDOW P/S
RADIO RM.
RADIO OFFICERS STATEROOM
EXPATRIATED OFFICERS
MASTER'S STATEROOM
MASTER'S OFFICE
MASTER'S DAYROOM
FASHION PLATE OPENING
DECK
STOWAGE FOR EMBARKATION LADDER
DECK CHAIR LKR BELOW P/S
DAVIT STANCHION P/S
LIBRARY
LOUNGE
NETTED RAIL
EMBARKATION GATE P/S
NETTED GATE
CABIN DECK
CARGO HOIST CONTROL
INCLINED STOOL P/S
TOPPING & SLEWING CONTROL
3RD ASST. ENGR.
C. ENGR'S D.R.
MACHINERY CASING
ENGINE DEPT. LKR.
OFFICERS LOUNGE
CHIEF STEWARD
MEDICAL TREATMENT RM.
FRAME FOR CANVAS PROTECTOR P/S
1ST ASST. ENGR.
2ND ASST. ENGR.
2ND MATE
CHIEF MATE
CONTAINER GUIDE STRUCTURE
BOAT DECK
DECK ENGINE MECHANIC (DAY)
CHIEF COOK
ELECTRICIAN
DK. ENGINE MECHANIC
WIPER
COOK/BAKER
MESSMAN
UTILITY
MACHINERY CASING
BOSUN
A.B.S
DECK MAINTENANCE
UPPER DECK
SUPERSTUCTURE DWG
SHT 5 OF 15


ENGINEERS WORKSHOP
V.L. (P/S)
GUARD RAIL & STANS P/S
WALKWAY PORT ONLY
GRINDER
STEERING GEAR FLAT
CRIBBING STORES P/S
C.O. SAMPLING LINE
NO. 9 HOLD
PORTABLE PLATFORMS STOWED P/S
DISTILLED WATER TANK P/S
MACHINERY SPACE
STOREROOM
35'-0" FLAT
THIRD DECK 35'-0" ABV. B.L.

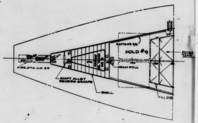

INNERBOTTOM
SHT 12 OF 15


SHAFT ALLEY
MACHINERY SPACE
CARGO HOLD #8
REFRIGERATED HOLD #7
REFRIGERATED HOLD #6
REFRIGERATED HOLD #5-C
REFRIGERATED HOLD #5-B
REFRIGERATED HOLD #5-A
DB TK #17 P/S
DB TK #14
DB TK #13
DB TK #12
DB TK #11
HEELING TANK #10-D P/S
HEELING TANK #10-C P/S
O.T. FLAT



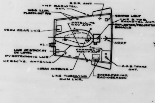
AFT DECK HOUSE TOP

MAIN DK (BELOW) AT SHELL
FIRE STA #29
CONTAINER GUIDE POST
CONTAINER GUIDE POST & STRUCTURE P/S



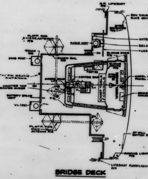
20'-0" FLAT

HOLD #9
FIRE STA. NO. 29
SHAFT ALLEY RECESS ESCAPE
SHELL
DRAIN WELL



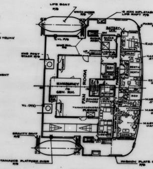
BRIDGE HOUSE TOP

VHF RADIOTEL. ANT.
SEARCH LIGHT
SATELLITE NAV. ANT.
DECK GEAR LKR.
PYROTECHNIC LKR.
LORAN ANTENNA
LINE THROWING GUN LKR.
EMERG. POS. IND. RADIOBEACON



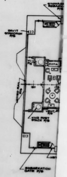
BRIDGE DECK

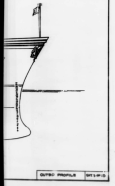
ANTENNA LEAD-IN TRUNK
DELAYING RAIL
YARDARM OVER
KING POST
WHEEL HOUSE INSTRUMENT PANEL OVER
BRIDGE CONTROL CONSOLE
CHART TABLE & CONSOLE
LIFEBOAT FLOODLIGHT



SUN DECK

LIFE BOAT P/S
RADIO RM.
RADIO OFFICER'S STATEROOM
REPATRIATED OFFICERS
MASTER'S STATEROOM
MASTER'S OFFICE
MASTER'S DAYROOM
EMERGENCY GEN. RM.
FAN ROOM
GRAVITY DAVIT P/S
MAINTENANCE PLATFORM OVER P/S




OUTBD PROFILE
SHT 5 OF 15

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

BUILDERS PLAN NO. H-4650-111-11-01

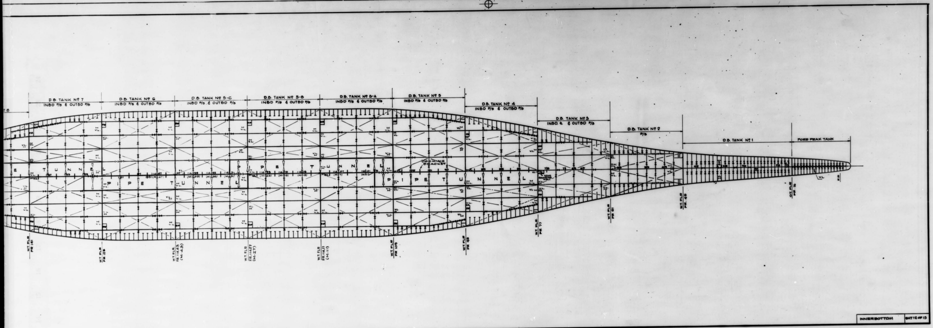
FRAME 7 OF 11

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

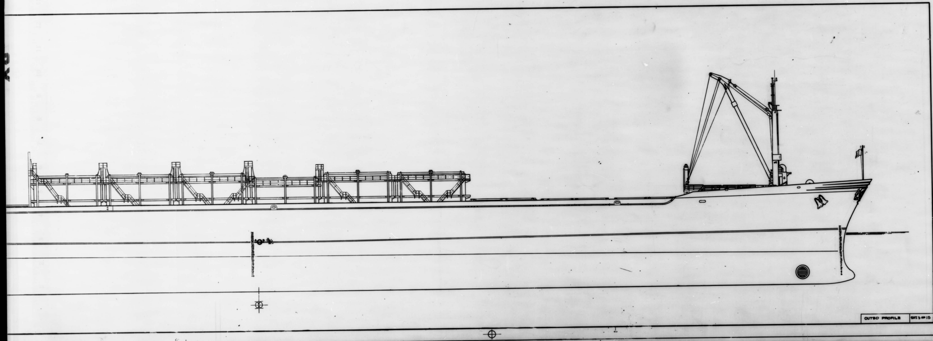
Sep 1980

BUILDERS PLAN NO. H-4650-111-11-01

FRAME 8 OF 11


D.B. TANK Nº 7
INBD P/S & OUTBD P/S
D.B. TANK Nº 6
INBD P/S & OUTBD P/S
D.B. TANK Nº 5-C
INBD P/S & OUTBD P/S
D.B. TANK Nº 5-B
INBD P/S & OUTBD P/S
D.B. TANK Nº 5-A
INBD P/S & OUTBD P/S
D.B. TANK Nº 5
INBD P/S & OUTBD P/S
D.B. TANK Nº 4
INBD P/S & OUTBD P/S
D.B. TANK Nº 3
INBD. & OUTBD P/S
D.B. TANK Nº 2
P/S
D.B. TANK Nº 1
FORE PEAK TANK
PIPE TUNNEL
PIPE TUNNEL
DOCKING BRACKET
F.P.

INNERBOTTOM SHT 12 OF 15



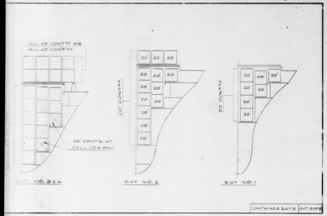
OUTBD PROFILE SHT 3 OF 15

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

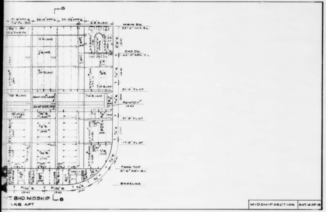
Sep 1980

BUILDERS PLAN NO. H-4650-111-11-01

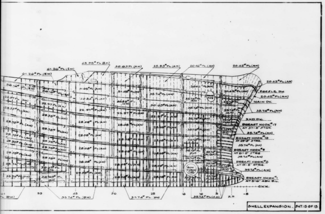
FRAME 9 OF 11


ALL 20 CONTRS OR
ALL 40 CONTRS
20' CONTRS
20 CONTRS
20 CONTR. AT CELL NO.4 ONLY
BAY NO. 3 & 4
BAY NO. 2
BAY NO. 1

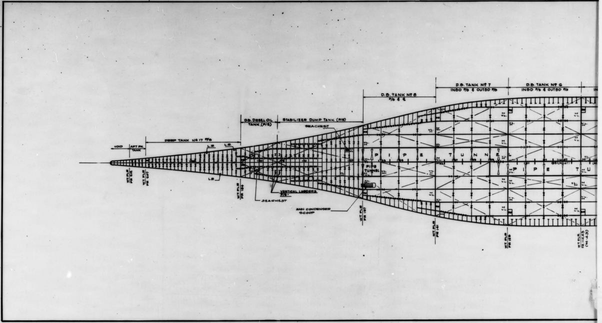
CONTAINER BAYS SHT. 13 OF 15

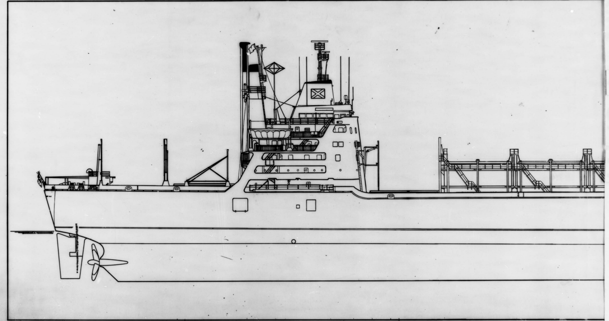

B
MAIN DK.
2ND DK.
31'-4" FLAT
21'-8" FLAT
17'-8" FLAT
TANK TOP
5'-6" ABV. B.L.
BASELINE
W.T. BHD. MIDSHIP
LKG. AFT
B

MIDSHIP SECTION SHT. 14 OF 15


FOCSLE DK
MAIN DK
2ND DK
BREAST HOOK
BOW THRUST
B.L.

SHELL EXPANSION. SHT. 15 OF 15


D.B. TANK Nº 7
INBD P/S & OUTBD P/S
D.B. TANK Nº 6
INBD P/S & OUTBD P/S
D.B. TANK Nº 8
P/S & C
D.B. DIESEL OIL TANK (P/S)
STABILIZER DUMP TANK (P/S)
SEACHEST
DEEP TANK Nº 17 P/S
VOID
AFT PK TANK
L.R.
PIPE TUNNEL
VERTICAL LADDERS
SEACHEST
MAIN CONDENSER SCOOP

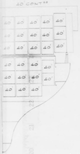


AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

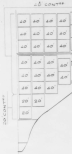
Sep 1980

BUILDERS PLAN NO. H-4650-111-11-01

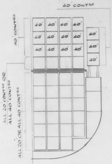
FRAME 10 OF 11



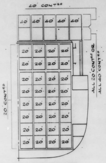
AY NO. 24


40' CONTRS
20' CONTRS

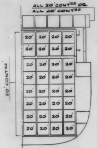
BAY NO. 23


40' CONTRS
40' CONTRS
ALL 20' CONTRS OR ALL 40' CONTRS
ALL 20 OR ALL 40 CONTRS

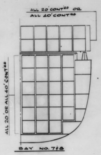
BAY NO. 21 & 22


40' CONTRS
20' CONTRS
ALL 20' CONTRS OR ALL 40' CONTRS

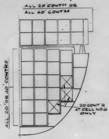
BAY NO. 13 THRU 20


ALL 20' CONTRS OR
ALL 40' CONTRS
20' CONTRS

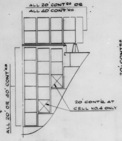
BAY NO. 9, 10, 11 & 12


ALL 20' CONTRS OR
ALL 40' CONTRS
ALL 20 OR ALL 40' CONTRS

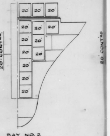
BAY NO. 7 & 8


ALL 20' CONTRS OR
ALL 40' CONTRS
ALL 20' OR 40' CONTRS
20' CONTR AT CELL NO. 6 ONLY

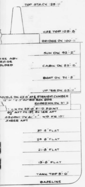
BAY NO. 5 & 6

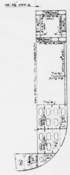

ALL 20' CONTRS OR
ALL 40' CONTRS
ALL 20' OR 40' CONTRS
20' CONTR AT CELL NO. 4 ONLY

BAY NO. 3 & 4

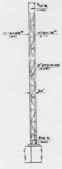

20' CONTRS
20' CONTRS

BAY NO. 2

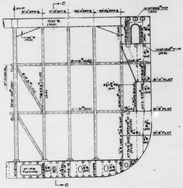

TOP STACK 129'-11"
HSE TOP 109'-8"
BRIDGE DK 100'-11"
SUN DK 92'-2"
CABIN DK 83'-5"
BOAT DK 74'-8"
UP TB DK 65'-11"
FORECASTLE DK 62'-0" AT STRAIGHT CAMBER
37'-4" FLAT
29'-8" FLAT
21'-8" FLAT
13'-8" FLAT
TANK TOP 5'-6"
BASELINE



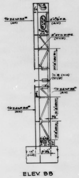
TYP SWASH BHD
LKG AFT


3" STD PIPE (TYP)

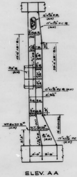
ELEV CC


C
C
PIPE TUNNEL
31'-4" FLAT
21'-8" FLAT
13'-8" FLAT

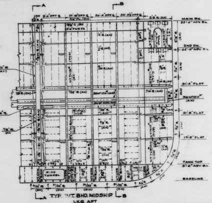
TYP MIDHOLD STRUCT
LKG AFT


3" STD PIPE (TYP)

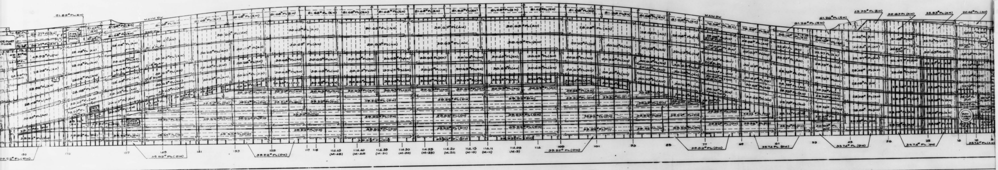
ELEV BB

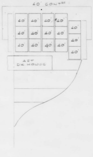


ELEV AA

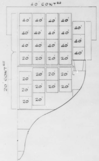

A
B
MAIN DK 53'-0" ABV B.L.
2ND DK 44'-0" ABV B.L.
31'-4" FLAT
21'-8" FLAT
13'-8" FLAT
TANK TOP 5'-6" ABV B.L.
BASELINE
PIPE TUNNEL

TYP. W.T. BHD MIDSHIP
LKG AFT

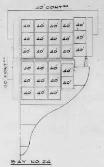

MAIN DK
MAIN DK
30.63# PL (AH)
35.52# PL (DH)
35.74# PL (DH)
125
101
77
61
45
35
10


40' CONTRS
ACT DK HOUSE

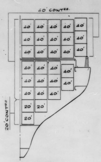
BAY NO. 26


40' CONTRS
20' CONTRS

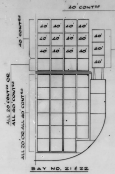
BAY NO. 25


40' CONTRS
40' CONTRS

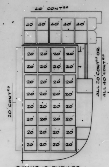
BAY NO. 24


40' CONTRS
20' CONTRS

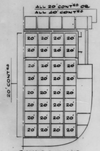
BAY NO. 23


40' CONTRS
40' CONTRS
ALL 20' CONTRS OR ALL 40' CONTRS
ALL 20' OR ALL 40' CONTRS

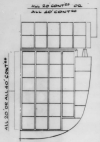
BAY NO. 21 & 22


40' CONTRS
20' CONTRS
ALL 20' CONTRS OR ALL 40' CONTRS

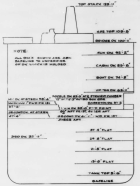
BAY NO. 13 THRU 20

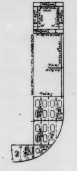

ALL 20' CONTRS OR ALL 40' CONTRS
20' CONTRS

BAY NO. 9, 10, 11 & 12

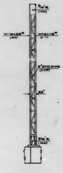

ALL 20' CONTRS OR ALL 40' CONTRS
ALL 20' OR ALL 40' CONTRS

BAY NO. 7 & 8

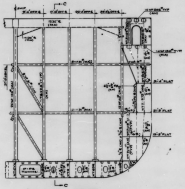

TOP STACK 129'-11"
HSE TOP 109'-5"
BRIDGE DK 100'-11"
NOTE:
ALL DIM'S SHOWN ARE ABV. BASELINE TO UNDERSIDE OF DK WHICH IS MOLDED
SUN DK 92'-2"
CABIN DK 83'-5"
BOAT DK 74'-8"
UPPER DK 65'-11"
FOCSLE DK 62'-0" AT ℄ STRAIGHT CAMBER
MN DK AT STERN 58'-4"
RAISED MN DK 57'-2"
57'-2"
MAIN DK 53'-0" FWD POINT
SECOND DK AT STERN
47'-4"
SHEER AFT
37'-8" FLAT
3RD DK 33'-0"
29'-8" FLAT
21'-8" FLAT
13'-8" FLAT
TANK TOP 5'-6"
BASELINE



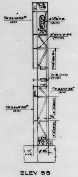
TYP SWASH BHD
LKG AFT



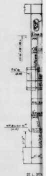
ELEV. CC


PIPE TUNNEL

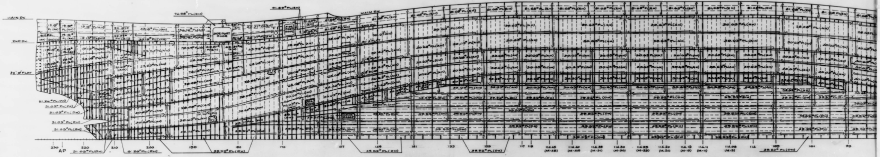
TYP. MIDHOLD STRUCT.
LKG AFT



ELEV. BB



ELEV


MAIN DK
2ND DK
35'-0" FLAT
SIDE PORT DOOR
AP
230
220
210
200
190
180
170
157
149
141
133
125
117
109
101
93

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-11-01

Sep 1980

FRAME 11 OF 11

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-111-11-02

FRAME 1 OF 3

ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.

ALTERATION	DATE OF ISSUE
ENGINEERING DISTRIBUTION	1
MAIL: OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R.	
INSPECTION: OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
OFFICE: HULL DRAFT. - 21	1
MACH. DRAFT. - 22	
ELEC. DRAFT. - 23	
OUTFIT. DRAFT. - 25	
ESTIMATING	
[illegible]	1
MISC.: PRODUCTION (BCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	7
YARD DISTRIBUTION	
YARD: GPM	
PIECE RATE - 11	
TEST DEPARTMENT	
STEEL PLANNING	
GROUND ASSEMBLY	
STRUCTURAL: NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL - 46	
WET DOCK	
MACH'Y & OUTFIT.: PIPE SHOP - 52	
OUTFIT. @ PIER	
PIPE DRAFT. - 52	
BOILER SHOP - 56	
OUTSIDE MACH. - 60	
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 81	
PAINT SHOP - 78	
WELDING	
OTHER: MOLD LOFT - 41	
BRACKET SHOP	
TOTAL YARD DIST.	

SQ. FT.

HULL	DESIGN	CHARGE
4651		8451
4650		8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/16" = 1'-0" DATE 5 OCT 1979
DRAWN B. DOUGHERTY INCHARGE
CHECKED [illegible] EXAMINED
REVIEWED APPROVED [illegible]

PLAN NO. H-4650-111-11-02 ALT. NO. 0

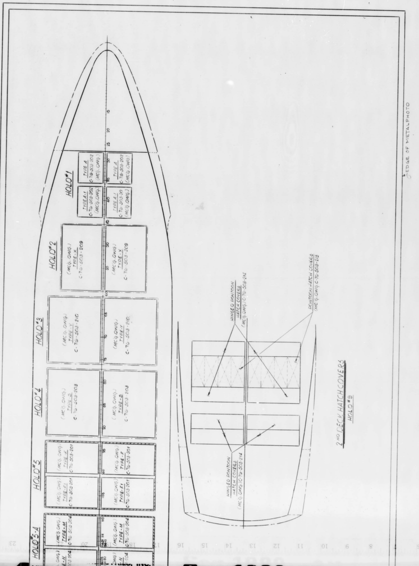
HATCH COVERS
ARRG'T & NUMBERING

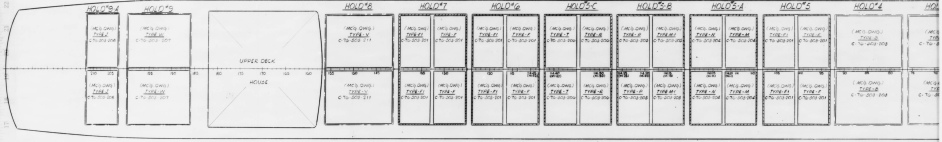
APPROVAL LETTERS					
HULL	4650				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	[illegible] 10-3-79				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE

REFERENCE PLANS

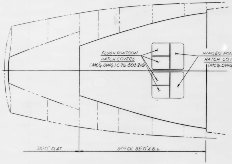
H-40


HOLD#1
TYPE A-1
C-TG-503-202
(MCG. DWG.)
TYPE A
C-TG-503-202
(MCG. DWG.)
HOLD#2
(MCG. DWG.)
TYPE-X
C-TG-503-209
HOLD#3
(MCG. DWG.)
TYPE-Y
C-TG-503-210
HOLD#4
(MCG. DWG.)
TYPE-S
C-TG-503-203
HOLD#5
(MCG. DWG.)
TYPE-F
C-TG-503-201
TYPE-F1
C-TG-503-201
HOLD#5-A
(MCG. DWG.)
TYPE-M
C-TG-503-204
TYPE-N
HINGED PONTOON HATCH COVERS (MCG. DWG.) C-TG-503-214
HINGED PONTOON HATCH COVERS (MCG. DWG.) C-TG-503-212
PONTOON HATCH COVERS (MCG. DWG. C-TG-503-213
2ND DECK HATCH COVERS
HOLD#9
EDGE OF METALPHOTO



HOLD#9-A
(MC'G. DWG.) TYPE J C-76-503-208
HOLD#9
(MC'G. DWG.) TYPE W C-76-503-207
UPPER DECK
HOUSE
HOLD#8
(MC'G. DWG.) TYPE-V C-76-503-211
HOLD#7
(MC'G. DWG.) TYPE-F1 C-76-503-201
(MC'G. DWG.) TYPE-F C-76-503-201
HOLD#6
(MC'G. DWG.) TYPE-F1 C-76-503-201
(MC'G. DWG.) TYPE-F C-76-503-201
HOLD#5-C
(MC'G. DWG.) TYPE-T C-76-503-206
(MC'G. DWG.) TYPE-R C-76-503-206
HOLD#5-B
(MC'G. DWG.) TYPE-P C-76-503-205
(MC'G. DWG.) TYPE M-1 C-76-503-205
HOLD#5-A
(MC'G. DWG.) TYPE-N C-76-503-204
(MC'G. DWG.) TYPE-M C-76-503-204
HOLD#5
(MC'G. DWG.) TYPE-F1 C-76-503-201
(MC'G. DWG.) TYPE-F C-76-503-201
HOLD#4
(MC'G. DWG.) TYPE-S C-76-503-203
210
205
195
190
185
180
175
170
165
160
155
150
145
135
130
120
115
114.45 (M-45)
114.40 (M-40)
114.30 (M-30)
114.25 (M-25)
114.20 (M-20)
114.15 (M-15)
114.05 (M-5)
114.01 (M-1)
114
110
105
100
95
90
85
80
75

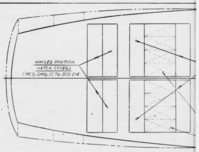
WEATHER DECK HATCH COVERS



FLUSH PONTOON HATCH COVERS (MC'G. DWG.) C-76-503-216
HINGED PONTOON HATCH COVERS (MC'G. DWG.) C-76-503-215
38'-0" FLAT
3RD DK. 33'-0" A.B.L.

3RD DECK HATCH COVERS
HOLD#9

HATCH COVER
ARRG'T & NUMBERING



HINGED PONTOON HATCH COVERS (MC'G. DWG.) C-76-503-214

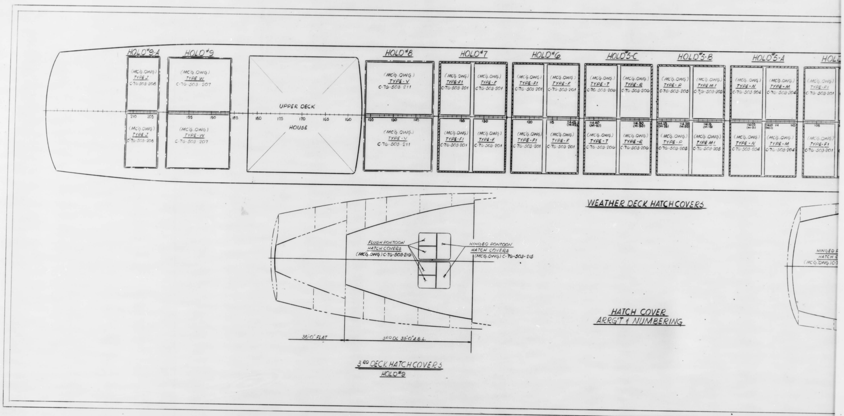
2ND DECK HATCH COVERS
HOLD#9

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-111-11-02

FRAME 2 OF 3


HOLD#9-A
(MC'G. DWG.)
TYPE J
C-76-503-208
HOLD#9
TYPE W
C-76-503-207
UPPER DECK
HOUSE
HOLD#8
TYPE-V
C-76-503-211
HOLD#7
TYPE-F1
TYPE-F
C-76-503-201
HOLD#6
HOLD#5-C
TYPE-T
TYPE-R
C-76-503-206
HOLD#5-B
TYPE-P
TYPE M-1
C-76-503-205
HOLD#5-A
TYPE-N
TYPE-M
C-76-503-204
210
205
195
190
185
180
175
170
165
160
155
150
145
135
130
120
115
114.45 (M-45)
114.40 (M-40)
114.30 (M-30)
114.25 (M-25)
114.20 (M-20)
114.15 (M-15)
114.05 (M-5)
114.01 (M-1)
114
110
105
FLUSH PONTOON HATCH COVERS (MC'G. DWG.) C-76-503-216
HINGED PONTOON HATCH COVERS (MC'G. DWG.) C-76-503-215
38'-0" FLAT
3RD DK 33'-0" A.B.L.

WEATHER DECK HATCH COVERS

HATCH COVER
ARRG'T & NUMBERING

3RD DECK HATCH COVERS
HOLD#9

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-111-11-02

FRAME 3 OF 3

4651						4650
4650						4650
HULL	DESIGN					CHARGE

JOB. NO. 111

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT MD 21219

PLAN NO. H4650-111-13-03 ALT. NO. 1'

OFFSETS

PRINCIPAL DIMENSIONS

LENGTH OVERALL	813'-3"
LENGTH ON 33'-0" W.L.	787'-0"
LENGTH B.P. ON 29'-0" W.L.	769'-0"
LENGTH B.P. ON 33'-0" W.L.	776'-0"
BEAM MOLDED	90'-0"
DEPTH MOLDED TO MAIN DK. MIDSHIP	53'-0"
SCANTLING & SUBDIVISION DRAFT MOLDED	33'-0"
DESIGN DRAFT	29'-0"

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	4-7-78				
A.B.S.					
USCG					

SHEET A

H-44

DESCRIPTION	SHEET NO.	
TITLE, PRINCIPAL DIMENSIONS	A	BOOK 1
INDEX	B	
DISTRIBUTION	C	
FRAME SPACING	D	
FOCSLE CAMBER	E	
STEM PROFILE	F	
STERN PROFILE	G	
TRANSOM PLAN VIEW	H	
TRANSOM OFFSETS	J	
HOUSE PROFILE	K	
DATA DEFINITION	L	
ENDING POINTS FOR FRAMES - AFT BODY	1-3	
WATERLINES - AFT BODY	4-11	
BUTTOCKS - AFT BODY	12-19	
TRANS. FRS. DEFINED - AFT BODY	20-23	
LONGL. CURVES DEFINED - AFT BODY	24-25	
LONGL. CURVES - AFT BODY (SEAMS, LONGLS, DECKS.)	26-164	
COMPLETE TRANS. FRS. - AFT BODY	165-310	
ENDING POINTS FOR FRAMES - FORE BODY	1-3	BOOK 2
WATERLINES - FORE BODY	4-11	
BUTTOCKS - FORE BODY	12-21	
TRANS. FRS. DEFINED - FORE BODY	22-25	
LONGL. CURVES DEFINED - FORE BODY	26-27	
LONGL. CURVES - FORE BODY (SEAMS, LONGLS, DECKS.)	28-170	
COMPLETE TRANS. FRAMES - FORE BODY	171-318	

H4650-51 INDEX SHEET B

		DATE OF ISSUE											
	ALTERATION	1											
	ENGINEERING DISTRIBUTION	3/17/78											
MAIL	OWNERS	2											
	AMERICAN BUREAU	3											
	LLOYD'S R.S.												
	U.S.M.A.	2											
	U S NAVY												
	U.S.C.G.	3											
	JOINER CONT'R.												
INSPECTION	OWNER'S INSP.	1											
	AM. BU. INSP.												
	LLOYD'S INSP.												
	U.S.M.A. INSP.	1											
	U.S. NAVY INSP.												
	U.S.C.G. INSP.												
OFFICE	HULL DRAFT. - 21	1											
	MACH. DRAFT. - 22	1											
	ELEC. DRAFT. - 23	1											
	OUTFIT. DRAFT. - 25												
	ESTIMATING												
MISC.	PRODUCTION (BCD)												
	ORDER DEPT.												
	JOINER CONT. YARD												
	TOTAL ENG'R. DIST.	15											

	YARD DISTRIBUTION	3/17/78											
YARD	CPM												
	PIECE RATE - 11												
	TEST DEPARTMENT												
	STRUC. PLANNING	1											
STRUCTURAL	GROUND ASSEMBLY												
	NO. WAY												
	NO. WAY												
	NO. WAY												
	NO. WAY												
	STRUCT. SUPER.												
	OPTICAL DETAIL - 45	1											
	WET DOCK												
MACH'Y & OUTFIT.	PIPE SHOP - 52												
	OUTFIT. #1 PIER												
	PIPE DRAFT. - 52												
	BOILER SHOP - 58												
	OUTSIDE MACH. - 60												
	ELECTRIC SHOP - 70												
	SHEET MET. SHOP - 74												
	COPPER SHOP - 51												
	PAINT SHOP - 75												
OTHER	WELDING												
	MOLD LOFT - 41												
	BRACKET SHOP												
	TOTAL YARD DIST.	2											

H4650-51 DISTRIBUTION SHEET C

6X Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

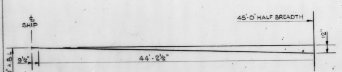
BUILDERS PLAN NO. H-4650-111-13-03

book 1 FRAME 1 OF 112

FRAME SPACING

STEM - F.P.	—	24"
FP - 16	—	24"
16 - 32	—	27"
32 - 41	—	32"
41 - 197	—	36"
197 - 203	—	30"
203 - 211	—	27"
211 - A.P.	—	24"
A.P. - STERN	—	24"

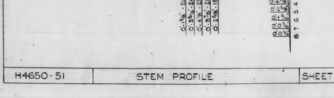
H4650-51	FRAME SPACING	SHEET D


℄ SHIP
45'-0" HALF BREADTH
12"
62'-0" A.B.L.
9½"
44'-2½"

12" STRAIGHT LINE CAMBER IN 44'-2½"

FOR OFFSETS SEE PAGES 162 & 163 BOOK 2

H4650-51	FOCSLE CAMBER	SHEET E


67'-9¾" ABL
19'-6½"
17'-1½" 64'-0" W.L.
14'-8" 60'-0" W.L.
12'-3⅜" 56'-0" W.L.
9'-11¾" 52'-0" W.L.
7'-9³⁄₁₆" 48'-0" W.L.
5'-8¼" 44'-0" W.L.
3'-10" 40'-0" W.L.
2'-3¹⁄₁₆" - 36'-0" W.L.
0'-11¹³⁄₁₆" 32'-0" W.L.
0'-6" - 30'-0" W.L.
0'-1¹³⁄₁₆" - 28'-0" W.L.
0'-1⅛" - 26'-0" W.L.
0'-3⁵⁄₁₆" - 24'-0" W.L.
0'-4⅛" - 22'-0" W.L.
0'-3⅞" - 20'-0" W.L.
0'-2⅝" - 18'-0" W.L.
0'-0⅜" - 16'-0" W.L.
0'-3" - 14'-0" W.L.
0'-9¹¹⁄₁₆" - 12'-0" W.L.
2'-1¾" - 10'-0" W.L.
6'-0⅝" - 8'-0" W.L.
7'-2⅝" - 6'-0" W.L.
5'-0" - 4'-0" W.L.
0'-10⅛" - 2'-0" W.L.
℄
F.P.
FR.0
1'-3¹⁵⁄₁₆" 1
0'-11⅜" 2
0'-7⅝" 3
0'-4⅜" 4
0'-2⅜" 5
0'-1⁵⁄₁₆" 6
0'-0⁷⁄₁₆" 7
0'-0¹⁄₁₆" 8

H4650-51	STEM PROFILE	SHEET F

BUILDERS PLAN NO. H-4650-111-13-03

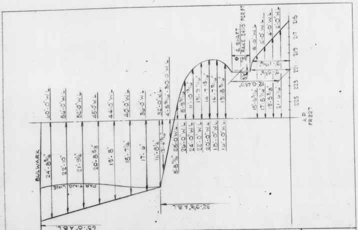
book 1

FRAME 2 OF 112

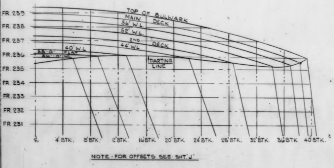
6X

Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910


BULWARK
PARTING LINE
63'-0" A.B.L.
32'-9⅛" A.B.L.
60'-0" W.L.
56'-0" W.L.
52'-0" W.L.
48'-0" W.L.
44'-0" W.L.
40'-0" W.L.
36'-0" W.L.
32'-0" W.L.
4'-5 9/16" 30'-0" W.L.
28'-0" W.L.
26'-0" W.L.
24'-0" W.L.
22'-0" W.L.
20'-0" W.L.
18'-0" W.L.
16'-0" W.L.
24'-8 3/16"
22'-10"
21'-9¼
20'-8⅝"
19'-8
18'-7¼
17'-6"
16'-8¼
13'-4 13/16
3'-8 11/16"
8'-9 13/16
11'-10 13/16
13'-9 11/16
14'-7 13/16
14'-7 9/16
13'-8 3/16
℄ SHAFT
RAKE .24115 PER FT
8'-0" W.L.
6'-0" W.L.
4'-0" W.L.
2'-0" W.L.
15'-6 3/16"
17'-5 11/16"
19'-5⅜"
21'-6 1/16"
12'-0.489"
215
217
219
221
223
225
A.P.
FR 227

H4650-51 | STERN PROFILE | SHEET G


FR. 239
FR. 238
FR. 237
FR. 236
FR. 235
FR. 234
FR. 233
FR. 232
FR. 231
TOP OF BULWARK
MAIN DECK
56' W.L.
52' W.L.
2ND DECK
44' WL
40' W.L.
38'-0" FLAT
36'-0" WL
PARTING LINE
℄
4' BTK.
8' BTK.
12' BTK.
16' BTK
20' BTK
24' BTK.
28' BTK.
32' BTK.
36' BTK
40' BTK.

NOTE - FOR OFFSETS SEE SHT. 'J'

H4650-51 | TRANSOM PLAN VIEW | SHEET H

PARTING LINE TRACE		INTERSECTION OF W.L W/C.L. OF SHIP		INTERSECTION OF W.L. & PARTING LINE		WATERLINE HALFBREADTH				PROFILE OF PARTING LINE AT BUTTOCKS		
DIST. OFF C.L.	DIST. AFT FR. 231	WATERLINE HEIGHTS	DIST. AFT FR. 231	WATERLINE HEIGHTS	DIST. OFF C.L.	WATERLINE HEIGHTS	H.B. AT FR. 231	H.B. AT FR 233	H.B. AT FR. 235	BTKS	HEIGHT ABV. B.L.	DIST. AFT FR. 231
C.L	8'-8¼"	C.L.	8'-8¼"	C.L.	0'-0"	36'-0"	8'-10 11/16"	7'-5 1/16"	5'-11⅝"	C.L	32'-9⅛"	8'-8¼"
2'-0"	9'-0 7/16"	36'-0"	9'-7⅛"	36'-0"	5'-4⅞"	38'-0"	12'-8 15/16"	11'-2¾"	9'-8⅝"	4'-0"	35'-2"	9'-3¾"
4'-0"	9'-3¾"	38'-0"	10'-1½"	38'-0"	9'-0⅛"	40'-0"	16'-11½"	15'-4⅞"	13'-10⅛"	8'-0"	37'-5 9/16"	9'-8⅜"
5'-4⅞"	9'-5 11/16"	40'-0"	10'-7⅞"	40'-0"	13'-1"	44'-0"	25'-7"	24'-2 7/16"	22'-9⅛"	12'-0"	39'-5 15/16"	9'-10½"
8'-0"	9'-8⅜"	44'-0"	11'-8⅜"	44'-0"	22'-2⅜"	2ND DK	30'-7⅜"	29'-9"	28'-10 9/16"	16'-0"	41'-3¾"	9'-10 3/16"
9'-2⅛"	9'-9⅛"	2ND. DK.	12'-6 13/16"	2ND DK.	28'-7 11/16"	48'-0"	31'-8⅝"	30'-10 5/16"	29'-11¼"	20'-0"	43'-0½"	9'-7 15/16"
12'-0"	9'-10½"	48'-0"	12'-8⅞"	48'-0"	29'-9⅜"	52'-0"	35'-6¾"	34'-11⅝"	34'-4 9/16"	24'-0"	44'-9 15/16"	9'-4"
13'-1"	9'-10 11/16"	52'-0"	13'-9 7/16"	52'-0"	34'-3 9/16"	56'-0"	38'-0⅛"	37'-6 3/16"	37'-0¼"	28'-0"	46'-10 11/16"	8'-11⅛"
16'-0"	9'-10 3/16"	56'-0"	14'-10 1/16"	56'-0"	36'-11 5/16"	MN. DK.	39'-3 5/16"	38'-10 1/16"	38'-4 11/16"	32'-0"	49'-8 3/16"	8'-6 11/16"
18'-0"	9'-9 5/16"	MN. DK	15'-8 11/16"	MN. DK.	38'-3⅛"	60'-0"	39'-6 9/16"	39'-1 1/16"	38'-8⅜"	36'-0"	54'-3 15/16"	8'-6⅛"
20'-0"	9'-7 15/16"	60'-0"	15'-10⅝"	60'-0"	38'-5⅞"					MN. DK	59'-3 5/16"	9'-0 3/16"
22'-2⅜"	9'-5⅞"	TOP BLWK	16'-8 3/16"	TOP BLWK	39'-6"					TOP BLWK	62'-10⅜"	9'-7¼"
24'-0"	9'-4"											
26'-0"	9'-1⅝"											
28'-0"	8'-11⅛"											
28'-7 11/16"	8'-10 5/16"											
29'-9⅜"	8'-8 15/16"											
32'-0"	8'-6 11/16"											
34'-3 9/16"	8'-5½"											
36'-0"	8'-6⅛"											
36'-11 5/16"	8'-7½"											
38'-3⅛"	9'-0 3/16"											
38'-5⅞"	9'-1 9/16"											
39'-6"	9'-7¼"											

H4650-51 | TRANSOM OFFSETS | SHEET J

⚠1 W.L. HALFBREADTH FR 235 AT 44'-0 W.L. CORRECTED FROM 24'-9⅛ TO 22'-9⅛

4-14-78 /jga

FRAME 3 OF 112

book 1

BUILDERS PLAN NO. H-4650-111-13-03

6X

Sep 1980

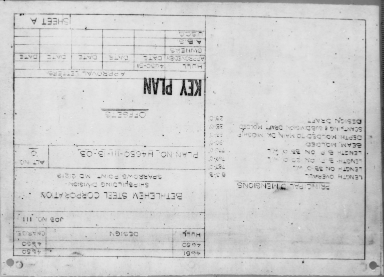
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

6X Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-13-03

book 1 FRAME 4 OF 112



4651		4650
4650		4650
HULL	DESIGN	CHARGE

JOB NO. 111

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT MD 21219

PLAN NO. H4650-111-13-03 ALT NO. 0

OFFSETS

KEY PLAN

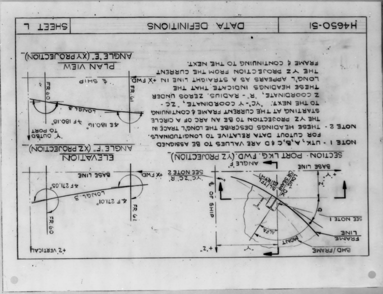
PRINCIPAL DIMENSIONS

LENGTH OVERALL	8'3'-8
LENGTH ON 33'-0" W.L.	787'-0"
LENGTH B.P. ON 20'-0" W.L.	769'-0"
LENGTH B.P. ON 33'-0" W.L.	770'-0"
BEAM, MOLDED	90'-0"
DEPTH MOLDED TO MAIN DK. MIDSHIP	53'-0"
SCANTLING & SUBDIVISION DRAFT MOLDED	33'-0"
DESIGN DRAFT	29'-0"

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS					
A.B.S.					
U.S.C.G.					

SHEET A


BHD/FRAME
FRAME LINE
SEE NOTE 1
MONT
ALFA
'Y'
+'Z'
℄ OF SHIP
GIRTH
LONG'L DK OR SEAM
BASE LINE
ANGLE 'F'
'YC' 'ZC' 'R'
SEE NOTE 2
+X FWD.
+'Z' VERTICAL
FR. 61
FR. 60
LONG'L 3
4F 271.01°
4F 271.05°
BASE LINE
'Y' OUTBD TO PORT
4E 180.16°
4F 180.18°
LONG'L 3
℄ SHIP
+X FWD.

SECTION · PORT LKG. FWD. (YZ PROJECTION)

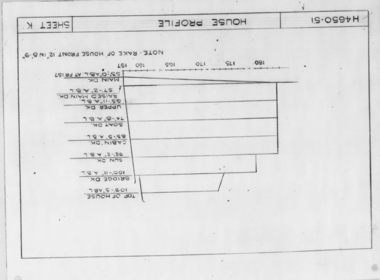
ELEVATION
ANGLE 'F' (XZ PROJECTION)

PLAN VIEW
ANGLE 'E' (XY PROJECTION)

NOTE 1 - UTK, A, B, C & D ARE VALUES TO BE ASSIGNED FOR CUTOUT DATA RELATIVE TO LONGITUDINALS.

NOTE 2 - THESE HEADINGS DESCRIBE THE LONG'L TRACE IN THE YZ PROJECTION TO BE AN ARC OF A CIRCLE STARTING AT THE CURRENT FRAME & CONTINUING TO THE NEXT. 'YC'-Y COORDINATE, 'ZC'-Z COORDINATE, 'R'-RADIUS. ZEROS UNDER THESE HEADINGS INDICATE THAT THE LONG'L APPEARS AS A STRAIGHT LINE IN THE YZ PROJECTION FROM THE CURRENT FRAME & CONTINUING TO THE NEXT.

H4650-51	DATA DEFINITIONS	SHEET L


TOP OF HOUSE
109'-5" A.B.L.
BRIDGE DK.
100'-11" A.B.L.
SUN DK.
92'-2" A.B.L.
CABIN DK.
83'-5" A.B.L.
BOAT DK.
74'-8" A.B.L.
UPPER DK.
65'-11" A.B.L.
RAISED MAIN DK.
57'-2" A.B.L.
MAIN DK.
53'-0" A.B.L. AT FR.157
157
160
165
170
175
180

NOTE - RAKE OF HOUSE FRONT 12" IN 8'-9"

H4650-51	HOUSE PROFILE	SHEET K

6X Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-13-03

book 1 FRAME 5 OF 112

DESCRIPTION	SHEET NO.	
TITLE, PRINCIPAL DIMENSIONS	A	BOOK 1
INDEX	B	
DISTRIBUTION	C	
FRAME SPACING	D	
FOCSLE CAMBER	E	
STEM PROFILE	F	
STERN PROFILE	G	
~~TRANSOM PLAN VIEW~~	H	
TRANSOM OFFSETS	J	
HOUSE PROFILE	K	
DATA DEFINITION	L	
ENDING POINTS FOR FRAMES - AFT BODY	1-3	
WATERLINES - AFT BODY	4-11	
BUTTOCKS - AFT BODY	12-19	
TRANS FRS. DEFINED - AFT BODY	20-23	
LONGL. CURVES DEFINED - AFT BODY	24-25	
LONGL. CURVES - AFT BODY (SEAMS, LONGLS, DECKS)	26-164	
COMPLETE TRANS. FRS. - AFT BODY	135-310	
ENDING POINTS FOR FRAMES - FORE BODY	1-3	BOOK 2
WATERLINES - FORE BODY	4-11	
BUTTOCKS - FORE BODY	12-21	
TRANS FRS. DEFINED - FORE BODY	22-25	
LONGL. CURVES DEFINED - FORE BODY	26-27	
LONGL. CURVES - FORE BODY (SEAMS, LONGLS, DECKS)	28-170	
COMPLETE TRANS. FRAMES - FORE BODY	171-318	

H4650-51 INDEX SHEET B

		DATE OF ISSUE
	ALTERATION	-
	ENGINEERING DISTRIBUTION	3 17 78
MAIL	OWNERS	2
MAIL	AMERICAN BUREAU	2
MAIL	LLOYD'S R.S.	
MAIL	U.S.M.A.	2
MAIL	U S NAVY	
MAIL	U.S.C.G.	3
MAIL	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	1
INSPECTION	AM. BU. INSP.	
INSPECTION	LLOYD'S INSP.	
INSPECTION	U.S.M.A. INSP.	1
INSPECTION	U.S. NAVY INSP.	
INSPECTION	U.S.C.G. INSP.	
OFFICE	HULL DRAFT. - 21	1
OFFICE	MACH. DRAFT. - 22	1
OFFICE	ELEC. DRAFT. - 23	1
OFFICE	OUTFIT. DRAFT. - 25	
OFFICE	ESTIMATING	
MISC.	PRODUCTION (BCD)	
MISC.	ORDER DEPT.	
MISC.	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	15

	YARD DISTRIBUTION	3 17 78
YARD	CPM	
YARD	PIECE RATE - 11	
YARD	TEST DEPARTMENT	
YARD	STRUC. PLANNING	1
STRUCTURAL	GROUND ASSEMBLY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	STRUCT. SUPER.	
STRUCTURAL	OPTICAL DETAIL - 45	1
STRUCTURAL	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP - 52	
MACH'Y & OUTFIT.	OUTFIT. #1 PIER	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52	
MACH'Y & OUTFIT.	BOILER SHOP - 58	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70	
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74	
MACH'Y & OUTFIT.	COPPER SHOP - 51	
MACH'Y & OUTFIT.	PAINT SHOP - 75	
OTHER	WELDING	
OTHER	MOLD LOFT - 41	
OTHER	BRACKET SHOP	
	TOTAL YARD DIST.	2

H4650-51 DISTRIBUTION SHEET C

FRAME SPACING

STEM - F.P.	—	24"
FP - 16	—	24"
16 - 32	—	27"
32 - 41	—	32"
41 - 197	—	36"
197 - 203	—	30"
203 - 211	—	27"
211 - A.P.	—	24"
A.P. - STERN	—	24"

36 - 41
37
38
39
40
41

32
5
12 ⟌160

13
12 ⟌180
12
40
36
4

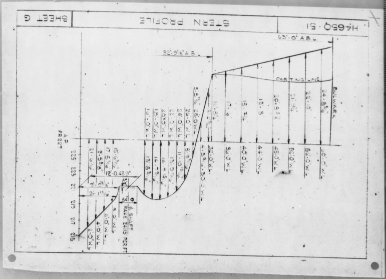
H4650-51 FRAME SPACING SHEET D

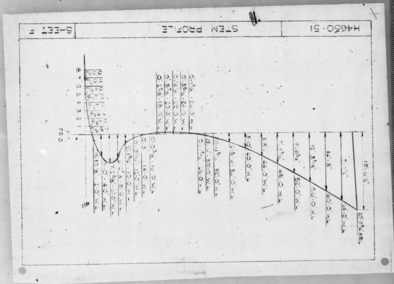
6X Sep 1980

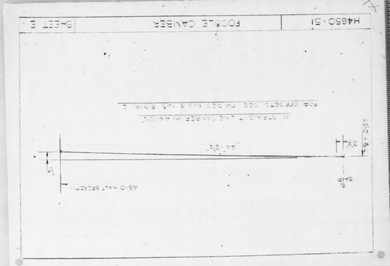
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 111-13-03

book 1 FRAME 6 OF 112


H4650-51
STERN PROFILE
SHEET G
63'-0" A.B.L.
PARTING LINE
BULWARK
AP
FR 227
℄ SHAFT
RAKE 24/115 PER FT


H4650-51
STEM PROFILE
SHEET F
F.P.
FR 0
67'-9¾" ABL

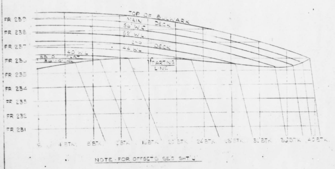

H4650-51
FOCSLE CAMBER
SHEET E
12" STRAIGHT LINE CAMBER IN 44'-2½"
44'-2½"
12"
45'-0 HALF BREADTH
℄ SHIP

6X **Sep 1980**

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-13-03

book 1 **FRAME 7 OF 112**

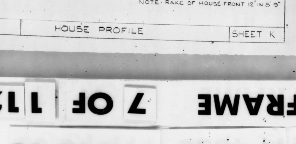

TOP OF BULWARK
MAIN DECK
56' W.L.
52' W.L.
2ND DECK
44' W.L.
40' W.L.
BB. 5 FLAT
36'-0" W.L.
PARTING LINE
FR 239
FR 238
FR 237
FR 236
FR 235
FR 234
FR 233
FR 232
FR 231
℄
4' BTK.
8' BTK.
12' BTK.
16' BTK.
20' BTK.
24' BTK.
28' BTK.
32' BTK.
36' BTK.
40' BTK.

NOTE - FOR OFFSETS SEE SHT J

H4650-51 | TRANSOM PLAN VIEW | SHEET H

PARTING LINE TRACE		INTERSECTION OF W.L W/C.L. OF SHIP		INTERSECTION OF W.L. & PARTING LINE		- WATERLINE HALFBREADTH				PROFILE OF PARTING LINE AT BUTTOCKS		
DIST. OFF C.L.	DIST. AFT FR 231	WATERLINE HEIGHTS	DIST AFT FR 231	WATERLINE HEIGHTS	DIST OFF C.L.	WATERLINE HEIGHTS	H.B. AT FR 231	H.B. AT FR 233	H.B. AT FR 235	BTKS	HEIGHT ABV B.L.	DIST AFT FR 231
C.L.	8'-8 1/4"	C.L.	8'-8 1/4"	C.L.	0'-0"	36'-0"	8'-10 11/16"	7'-5 1/16"	5'-11 5/8"	C.L.	32'-9 1/8"	8'-8 1/4"
2'-0"	9'-0 7/16"	36'-0"	9'-7 1/8"	36'-0"	5'-4 7/8"	38'-0"	12'-8 15/16"	11'-2 3/4"	9'-8 5/8"	4'-0"	35'-2"	9'-3 3/4"
4'-0"	9'-3 3/4"	38'-0"	10'-1 1/2"	38'-0"	9'-0 1/8"	40'-0"	16'-11 1/2"	15'-4 7/8"	13'-10 1/8"	8'-0"	37'-5 9/16"	9'-8 3/8"
5'-4 7/8"	9'-5 11/16"	40'-0"	10'-7 7/8"	40'-0"	13'-1"	44'-0"	25'-7"	24'-2 7/16"	24'-9 1/8"	12'-0"	39'-5 15/16"	9'-10 1/2"
8'-0"	9'-8 3/8"	44'-0"	11'-8 3/8"	44'-0"	22'-2 3/8"	2ND DK.	30'-7 3/8"	29'-9"	28'-10 9/16"	16'-0"	41'-3 3/4"	9'-10 3/16"
9'-2 1/8"	9'-9 1/8"	2ND DK.	12'-6 13/16"	2ND DK.	28'-7 11/16"	48'-0"	31'-8 5/8"	30'-10 5/16"	29'-11 1/4"	20'-0"	43'-0 1/2"	9'-7 15/16"
12'-0"	9'-10 1/2"	48'-0"	12'-8 7/8"	48'-0"	29'-9 3/8"	52'-0"	35'-6 3/4"	34'-11 5/8"	34'-4 9/16"	24'-0"	44'-9 15/16"	9'-4"
13'-1"	9'-10 11/16"	52'-0"	13'-9 7/16"	52'-0"	34'-3 9/16"	56'-0"	38'-0 1/8"	37'-6 3/16"	37'-0 1/4"	28'-0"	46'-10 11/16"	8'-11 1/8"
16'-0"	9'-10 3/16"	56'-0"	14'-10 1/16"	56'-0"	36'-11 5/16"	MN DK.	39'-3 5/16"	38'-10 1/16"	38'-4 9/16"	32'-0"	49'-8 3/16"	8'-6 11/16"
18'-0"	9'-9 5/16"	MN. DK.	15'-8 11/16"	MN. DK.	38'-3 1/8"	60'-0"	39'-6 9/16"	39'-1 1/16"	38'-8 3/8"	36'-0"	54'-3 5/16"	8'-6 1/8"
20'-0"	9'-7 15/16"	60'-0"	15'-10 5/8"	60'-0"	38'-5 7/8"					MN. DK.	59'-3 5/16"	9'-0 3/16"
22'-2 3/8"	9'-5 7/8"	TOP BLWK.	16'-8 3/16"	TOP BLWK.	39'-6"					TOP BLWK.	62'-10 3/8"	9'-7 1/4"
24'-0"	9'-4"											
26'-0"	9'-1 5/8"											
28'-0"	8'-11 1/8"											
28'-7 1/16"	8'-10 5/16"											
29'-9 3/8"	8'-8 5/16"											
32'-0"	8'-6 11/16"											
34'-3 9/16"	8'-5 1/2"											
36'-0"	8'-6 1/8"											
36'-11 5/16"	8'-7 1/2"											
38'-3 1/8"	9'-0 3/16"											
38'-5 7/8"	9'-1 3/16"											
39'-6"	9'-7 1/4"											

H4650-51 | TRANSOM OFFSETS | SHEET J


TOP OF HOUSE
109'-5" A.B.L.
BRIDGE DK.
100'-11" A.B.L.
SUN DK.
92'-2" A.B.L.
CABIN DK.
83'-5" A.B.L.
BOAT DK.
74'-8" A.B.L.
UPPER DK.
65'-11" A.B.L.
RAISED MAIN DK.
57'-2" A.B.L.
MAIN DK.
53'-0" A.B.L. AT FR 157
180
175
170
165
160
157

NOTE - RAKE OF HOUSE FRONT 12" IN 5'-9"

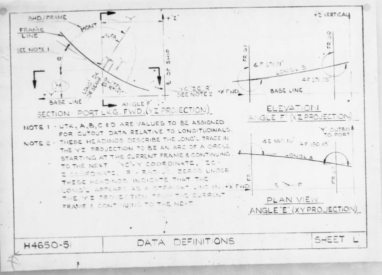
H4650-51 | HOUSE PROFILE | SHEET K

6X **Sep 1980**

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 111-13-03

book 1 **FRAME 8 OF 112**



SECTION · PORT LKG. FWD. (YZ PROJECTION)

NOTE 1 - UTK, A, B, C & D ARE VALUES TO BE ASSIGNED FOR CUTOUT DATA RELATIVE TO LONGITUDINALS.

NOTE 2 - THESE HEADINGS DESCRIBE THE LONG'L TRACE IN THE YZ PROJECTION TO BE AN ARC OF A CIRCLE STARTING AT THE CURRENT FRAME & CONTINUING TO THE NEXT. 'YC'-Y COORDINATE, 'ZC'-Z COORDINATE, R - RADIUS. ZEROS UNDER THESE HEADINGS INDICATE THAT THE LONG'L APPEARS AS A STRAIGHT LINE IN THE YZ PROJECTION FROM THE CURRENT FRAME & CONTINUING TO THE NEXT.

ELEVATION
ANGLE "F" (XZ PROJECTION)

PLAN VIEW
ANGLE "E" (XY PROJECTION)

H4650-51	DATA DEFINITIONS	SHEET L

```
                                                                    PAGE NO  1

        ****************************************************
        *                                                  *
        *              T A B L E   O F   O F F S E T S     *
        *                                                  *
        *                  H U L L   N O   4650-AFT        *
        *                                                  *
        *  FRAME NUMBERS IN TABLE OF OFFSETS ARE  90.00 LARGER THAN ON E-FILE
        *                                                  *
        *                    DATE  3/ 1/78                 *
        *                                                  *
        *               CONVERSION FACTOR  304.8           *
        *              (UNITS FROM E-FILE TO TABLE)        *
        *                                                  *
        ****************************************************


              COMMENTS: THIS RUN CONTAINS ENDING POINTS FOR FRAMES
                        FRAMES 214-222 ARE AS MODIFIED BY THE LOFT

              UNITS: FT/IN/SIX
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BSCO FARRELL CONTAINER H 4650 AFT                  DATE  3/ 1/78                                  PAGE NO  2

                                      ENDING POINTS FOR FRAMES
 FRAME      DOWN       SIDE           FRAME      DOWN       SIDE           FRAME      DOWN       SIDE

114.48    30/ 3/14   17/ 0/ 0        115.00    30/ 3/14   17/ 0/ 2        116.00    30/ 3/11   17/ 0/ 8
117.00    30/ 3/ 5   17/ 1/ 9        118.00    30/ 2/ 7   17/ 3/ 3        119.00    30/ 1/ 2   17/ 5/ 5
120.00    29/11/ 6   17/ 7/15        121.00    29/ 9/ 0   17/11/ 1        122.00    29/ 5/15   18/ 2/ 9
123.00    29/ 2/ 3   18/ 6/ 8        124.00    28/ 9/11   18/10/12        125.00    28/ 4/ 4   19/ 3/ 4

126.00    27/ 9/14   26/ 2/12        127.00    27/ 2/10   20/ 1/ 0        128.00    26/ 6/ 9   20/ 6/ 4
129.00    25/ 9/12   20/11/12        130.00    25/ 0/ 5   21/ 5/ 8        131.00    24/ 2/ 4   21/11/ 7
132.00    23/ 3/11   22/ 5/10        133.00    22/ 4/11   23/ 0/ 1        134.00    21/ 5/ 6   23/ 6/11
135.00    20/ 5/13   24/ 1/ 9        136.00    19/ 6/ 1   24/ 8/11        137.00    18/ 6/ 4   25/ 4/ 0

138.00    17/ 6/ 7   25/11/ 8        139.00    16/ 6/11   26/ 7/ 5        140.00    15/ 7/ 3   27/ 3/ 6
141.00    14/ 7/15   27/11/11        142.00    13/ 9/ 2   28/ 8/ 5        143.00    12/10/11   29/ 5/ 2
144.00    12/ 0/13   30/ 2/ 4        145.00    11/ 3/ 9   30/11/11        146.00    10/ 7/ 0   31/ 9/ 7
147.00     9/11/ 3   32/ 7/ 8        148.00     9/ 4/ 2   33/ 5/13        149.00     8/ 9/11   34/ 4/ 4

150.00     8/ 3/14   35/ 2/14        151.00     7/10/10   36/ 1/ 8        152.00     7/ 5/14   37/ 0/ 3
153.00     7/ 1/ 9   37/10/12        154.00     6/ 9/11   38/ 9/ 2        155.00     6/ 6/ 3   39/ 7/ 5
156.00     6/ 3/ 0   40/ 5/ 4        157.00     6/ 0/ 1   41/ 2/13        158.00     5/ 9/ 7   42/ 0/ 1
159.00     5/ 7/ 0   42/ 8/15        160.00     5/ 4/12   43/ 5/ 5        161.00     5/ 2/10   44/ 1/ 6

162.00     5/ 0/12   44/ 9/ 2        163.00     4/10/14   45/ 4/ 5        164.00     4/ 9/ 2   45/11/ 3
165.00     4/ 7/ 7   46/ 5/ 9        166.00     4/ 5/12   46/11/ 8        167.00     4/ 4/ 1   47/ 5/ 0
168.00     4/ 2/ 6   47/10/ 0        169.00     4/ 0/12   48/ 2/ 9        170.00     3/11/ 2   48/ 6/12
171.00     3/ 9/ 9   48/10/10        172.00     3/ 8/ 1   49/ 2/ 3        173.00     3/ 6/ 9   49/ 5/ 9

174.00     3/ 5/ 3   49/ 8/13        175.00     3/ 3/12   49/11/15        176.00     3/ 2/ 7   50/ 2/15
177.00     3/ 1/ 2   50/ 6/ 0        178.00     2/11/15   50/ 9/ 1        179.00     2/10/13   51/ 0/ 3
180.00     2/ 9/ 6   51/ 3/ 7        181.00     2/ 7/15   51/ 6/13        182.00     2/ 6/ 9   51/10/ 6
183.00     2/ 5/ 3   52/ 2/ 4        184.00     2/ 3/15   52/ 6/ 5        185.00     2/ 2/10   52/10/11

186.00     2/ 1/ 7   53/ 3/ 8        187.00     0/ 0/ 0   53/ 8/10        188.00     0/ 1/ 7   54/ 2/ 4
189.00     0/ 1/ 6   54/ 8/ 5        190.00     0/ 1/ 5   55/ 2/13        191.00     0/ 1/ 4   55/ 9/12
192.00     0/ 1/ 3   56/ 5/ 2        193.00     0/ 1/ 2   57/ 0/15        194.00     0/ 1/ 1   57/ 9/ 3
195.00     0/ 1/ 0   58/ 5/15        196.00     0/ 0/15   59/ 3/ 2        197.00     0/ 0/14   60/ 0/13

198.00     0/ 0/13   60/ 9/ 4        199.00     0/ 0/12   61/ 6/ 0        200.00     0/ 0/11   ***/**/**
201.00     0/ 0/10   ***/**/**       202.00     0/ 0/10   ***/**/**       203.00     1/ 1/12   ***/**/**
204.00     0/ 0/ 8   ***/**/**       205.00     0/ 0/ 7   ***/**/**       206.00     0/ 0/ 6   ***/**/**
207.00     0/ 0/ 6   ***/**/**       208.00     0/ 0/ 5   ***/**/**       209.00     0/ 0/ 4   ***/**/**
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6X Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-13-03

book 1 FRAME 9 OF 112

```
 174.00     3/ 5/ 3   49/ 8/13        175.00    3/ 3/12   49/11/15        176.00    3/ 2/ 7   50/ 2/15
 177.00     3/ 1/ 2   50/ 6/ 0        178.00    2/11/15   50/ 9/ 1        179.00    2/10/13   51/ 0/ 3
 180.00     2/ 9/ 6   51/ 3/ 7        181.00    2/ 7/15   51/ 6/13        182.00    2/ 6/ 9   51/10/ 6
 183.00     2/ 5/ 3   52/ 2/ 4        184.00    2/ 3/15   52/ 6/ 5        185.00    2/ 2/10   52/10/11

 186.00     2/ 1/ 7   53/ 3/ 8        187.00    0/ 0/ 0   53/ 8/10        188.00    0/ 1/ 7   54/ 2/ 4
 189.00     0/ 1/ 6   54/ 8/ 5        190.00    0/ 1/ 5   55/ 2/13        191.00    0/ 1/ 4   55/ 9/12
 192.00     0/ 1/ 3   56/ 5/ 2        193.00    0/ 1/ 2   57/ 0/15        194.00    0/ 1/ 1   57/ 9/ 3
 195.00     0/ 1/ 0   58/ 5/15        196.00    0/ 0/15   59/ 3/ 2        197.00    0/ 0/14   60/ 0/13

 198.00     0/ 0/13   60/ 9/ 4        199.00    0/ 0/12   61/ 6/ 0        200.00    0/ 0/11   ***/**/**
 201.00     0/ 0/10   ***/**/**       202.00    0/ 0/10   ***/**/**       203.00    1/ 1/12   ***/**/**
 204.00     0/ 0/ 8   ***/**/**       205.00    0/ 0/ 7   ***/**/**       206.00    0/ 0/ 6   ***/**/**
 207.00     0/ 0/ 6   ***/**/**       208.00    0/ 0/ 5   ***/**/**       209.00    0/ 0/ 4   ***/**/**



BSCO FARRELL CONTAINER H 4650 AFT                  DATE  3/ 1/78                                  PAGE NO  3

                                      ENDING POINTS FOR FRAMES
  FRAME      DOWN        SIDE             FRAME     DOWN       SIDE             FRAME     DOWN       SIDE

 210.00     0/ 0/ 3   ***/**/**        211.00     0/ 0/ 3   ***/**/**       212.00     0/ 0/ 2   ***/**/**
 213.00     0/ 7/12   ***/**/**        214.00     0/ 5/ 0   ***/**/**       215.00     0/ 1/ 8   ***/**/**



BSCO FARRELL CONTAINER H 4650 AFT                  DATE  3/ 1/78                                  PAGE NO  4
FRAME    *     WL         WL         WL         WL         WL         WL         WL         WL         WL         WL         WL         WL
NUMBER   *   1/ 0/ 0   2/ 0/ 0   3/ 0/ 0   4/ 0/ 0   6/ 0/ 0   8/ 0/ 0  10/ 0/ 0  12/ 0/ 0  14/ 0/ 0  16/ 0/ 0  20/ 0/ 0  24/ 0/ 0
         *
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         *

114.48   *  35/ 9/ 3  37/ 9/10  39/ 2/14  40/ 4/ 4  41/11/13  43/ 1/ 8  43/11/ 3  44/ 5/12  44/ 9/13  44/11/12  45/ 0/ 0  45/ 0/ 0
115.00   *  35/ 9/ 1  37/ 9/10  39/ 2/14  40/ 4/ 4  41/11/14  43/ 1/ 8  43/11/ 2  44/ 5/12  44/ 9/13  44/11/12  45/ 0/ 0  45/ 0/ 0
116.00   *  35/ 8/15  37/ 9/ 8  39/ 2/12  40/ 4/ 2  41/11/12  43/ 1/ 7  43/11/ 1  44/ 5/11  44/ 9/12  44/11/12  45/ 0/ 0  45/ 0/ 0

117.00   *  35/ 8/ 9  37/ 9/ 2  39/ 2/ 7  40/ 3/13  41/11/ 8  43/ 1/ 4  43/10/14  44/ 5/ 8  44/ 9/11  44/11/11  45/ 0/ 0  45/ 0/ 0
118.00   *  35/ 8/ 0  37/ 8/ 9  39/ 1/14  40/ 3/ 5  41/11/ 1  43/ 0/14  43/10/ 9  44/ 5/ 4  44/ 9/ 9  44/11/10  45/ 0/ 0  45/ 0/ 0
119.00   *  35/ 6/15  37/ 7/10  39/ 1/ 1  40/ 2/ 9  41/10/ 7  43/ 0/ 5  43/10/ 2  44/ 4/15  44/ 9/ 4  44/11/ 8  45/ 0/ 0  45/ 0/ 0

120.00   *  35/ 5/ 9  37/ 6/ 7  38/11/15  40/ 1/ 9  41/ 9/ 9  42/11/11  43/ 9/10  44/ 4/ 8  44/ 8/15  44/11/ 6  45/ 0/ 0  45/ 0/ 0
121.00   *  35/ 3/13  37/ 4/14  38/10/ 9  40/ 0/ 4  41/ 8/ 9  42/10/13  43/ 8/14  44/ 3/15  44/ 8/ 8  44/11/ 2  45/ 0/ 0  45/ 0/ 0
122.00   *  35/ 1/11  37/ 3/ 1  38/ 8/14  39/10/12  41/ 7/ 5  42/ 9/13  43/ 8/ 1  44/ 3/ 4  44/ 8/ 0  44/10/14  45/ 0/ 0  45/ 0/ 0

123.00   *  34/11/ 2  37/ 0/14  38/ 6/15  39/ 9/ 0  41/ 5/14  42/ 8/ 9  43/ 7/ 1  44/ 2/ 7  44/ 7/ 7  44/10/ 8  45/ 0/ 0  45/ 0/ 0
124.00   *  34/ 8/ 2  36/10/ 5  38/ 4/11  39/ 7/ 0  41/ 4/ 3  42/ 7/ 3  43/ 5/15  44/ 1/ 9  44/ 6/13  44/10/ 2  45/ 0/ 0  45/ 0/ 0
125.00   *  34/ 4/10  36/ 7/ 5  38/ 2/ 2  39/ 4/11  41/ 2/ 4  42/ 5/ 9  43/ 4/10  44/ 0/ 8  44/ 6/ 0  44/ 9/10  45/ 0/ 0  45/ 0/ 0

126.00   *  34/ 0/ 9  36/ 4/ 0  37/11/ 3  39/ 2/ 1  41/ 0/ 2  42/ 3/13  43/ 3/ 3  43/11/ 6  44/ 5/ 3  44/ 9/ 1  45/ 0/ 0  45/ 0/ 0
127.00   *  33/ 8/ 1  36/ 0/ 4  37/ 7/15  38/11/ 4  40/ 9/12  42/ 1/14  43/ 1/ 9  43/10/ 2  44/ 4/ 4  44/ 8/ 7  45/ 0/ 0  45/ 0/ 0
128.00   *  33/ 3/ 2  35/ 8/ 2  37/ 4/ 6  38/ 8/ 0  40/ 7/ 2  41/11/10  42/11/13  43/ 8/12  44/ 3/ 3  44/ 7/11  44/11/15  45/ 0/ 0

129.00   *  32/ 9/12  35/ 3/10  37/ 0/ 8  38/ 4/ 9  40/ 4/ 4  41/ 9/ 4  42/ 9/14  43/ 7/ 3  44/ 2/ 1  44/ 6/14  44/11/12  45/ 0/ 0
130.00   *  32/ 4/ 0  34/10/14  36/ 8/ 4  38/ 0/13  40/ 1/ 3  41/ 6/12  42/ 7/12  43/ 5/ 9  44/ 0/12  44/ 5/15  44/11/ 7  45/ 0/ 0
131.00   *  31/ 9/14  34/ 5/12  36/ 3/12  37/ 8/12  39/ 9/13  41/ 3/15  42/ 5/ 8  43/ 3/11  43/11/ 5  44/ 4/13  44/11/ 1  45/ 0/ 0

132.00   *  31/ 3/ 8  34/ 0/ 5  35/11/ 0  37/ 4/ 8  39/ 6/ 5  41/ 1/ 0  42/ 3/ 1  43/ 1/11  43/ 9/12  44/ 3/10  44/10/ 9  45/ 0/ 0
133.00   *  30/ 8/13  33/ 6/11  35/ 6/ 0  37/ 0/ 0  39/ 2/ 8  40/ 9/13  42/ 0/ 7  42/11/ 9  43/ 8/ 1  44/ 2/ 5  44/ 9/15  45/ 0/ 0
134.00   *  30/ 1/13  33/ 0/11  35/ 0/11  36/ 7/ 3  38/10/ 8  40/ 6/ 7  41/ 9/ 9  42/ 9/ 4  43/ 6/ 3  44/ 0/14  44/ 9/ 2  45/ 0/ 0

135.00   *  29/ 6/10  32/ 6/ 8  34/ 7/ 2  36/ 2/ 2  38/ 6/ 4  40/ 2/14  41/ 6/ 9  42/ 6/12  43/ 4/ 2  43/11/ 4  44/ 8/ 4  45/ 0/ 0
136.00   *  28/11/ 4  32/ 0/ 1  34/ 1/ 5  35/ 8/13  38/ 1/12  39/11/ 1  41/ 3/ 5  42/ 4/ 0  43/ 1/14  43/ 9/ 7  44/ 7/ 4  44/11/13
137.00   *  28/ 3/10  31/ 5/ 6  33/ 7/ 4  35/ 3/ 4  37/ 9/ 0  39/ 7/ 0  40/11/14  42/ 1/ 2  42/11/ 8  43/ 7/ 8  44/ 6/ 1  44/11/ 9

138.00   *  27/ 7/15  30/10/ 8  33/ 0/15  34/ 9/ 6  37/ 4/ 0  39/ 2/10  40/ 8/ 3  41/10/ 0  42/ 8/15  43/ 5/ 6  44/ 4/13  44/11/ 3
139.00   *  27/ 0/ 2  30/ 3/ 7  32/ 6/ 7  34/ 3/ 5  36/10/12  38/10/ 2  40/ 4/ 5  41/ 6/11  42/ 6/ 2  43/ 3/ 2  44/ 3/ 6  44/10/10
140.00   *  26/ 4/ 2  29/ 8/ 3  31/11/11  33/ 9/ 0  36/ 5/ 3  38/ 5/ 4  40/ 0/ 2  41/ 3/ 2  42/ 3/ 2  43/ 0/10  44/ 1/13  44/ 9/15

141.00   *  25/ 7/15  29/ 0/12  31/ 4/12  33/ 2/ 7  35/11/ 7  38/ 0/ 3  39/ 7/12  40/11/ 6  41/11/15  42/ 9/15  44/ 0/ 1  44/ 9/ 2
142.00   *  24/11/11  28/ 5/ 1  30/ 9/ 9  32/ 7/11  35/ 5/ 6  37/ 6/14  39/ 3/ 1  40/ 7/ 5  41/ 8/ 8  42/ 7/ 1  43/10/ 4  44/ 8/ 3
143.00   *  24/ 3/ 4  27/ 9/ 4  30/ 2/ 2  32/ 0/10  34/11/ 1  37/ 1/ 5  38/10/ 2  40/ 3/ 1  41/ 4/13  42/ 4/ 0  43/ 8/ 3  44/ 7/ 2

144.00   *  23/ 6/13  27/ 1/ 5  29/ 6/ 9  31/ 5/ 7  34/ 4/10  36/ 7/ 7  38/ 5/ 0  39/10/ 9  41/ 0/15  42/ 0/11  43/ 6/ 1  44/ 5/14
145.00   *  22/10/ 4  26/ 5/ 3  28/10/12  30/ 9/15  33/ 9/13  36/ 1/ 6  37/11/ 9  39/ 5/12  40/ 8/12  41/ 9/ 2  43/ 3/12  44/ 4/ 9
146.00   *  22/ 1/11  25/ 8/15  28/ 2/13  30/ 2/ 5  33/ 2/13  35/ 7/ 0  37/ 5/13  39/ 0/11  40/ 4/ 5  41/ 5/ 6  43/ 1/ 4  44/ 3/ 1



BSCO FARRELL CONTAINER H 4650 AFT                  DATE  3/ 1/78                                  PAGE NO  5
FRAME    *     WL         WL         WL         WL         WL         WL         WL         WL         WL         WL         WL         WL
NUMBER   *   1/ 0/ 0   2/ 0/ 0   3/ 0/ 0   4/ 0/ 0   6/ 0/ 0   8/ 0/ 0  10/ 0/ 0  12/ 0/ 0  14/ 0/ 0  16/ 0/ 0  20/ 0/ 0  24/ 0/ 0
         *
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         *

147.00   *  21/ 4/15  25/ 0/ 8  27/ 6/10  29/ 8/ 7  32/ 7/ 9  35/ 0/ 6  36/11/13  38/ 7/ 4  39/11/10  41/ 1/ 6  42/10/ 9  44/ 1/ 7
148.00   *  20/ 8/ 3  24/ 4/ 0  26/10/ 5  28/10/ 6  32/ 0/ 1  34/ 5/ 7  36/ 5/ 8  38/ 1/10  39/ 6/11  40/ 9/ 2  42/ 7/11  43/11/11
149.00   *  19/11/ 9  23/ 7/ 7  26/ 1/15  28/ 2/ 3  31/ 4/ 6  33/10/ 5  35/10/15  37/ 7/11  39/ 1/ 7  40/ 4/11  42/ 4/11  43/ 9/13

150.00   *  19/ 3/ 0  22/10/14  25/ 5/ 8  27/ 5/15  30/ 8/ 8  33/ 2/15  35/ 4/ 2  37/ 1/ 9  38/ 8/ 0  39/11/15  42/ 1/ 8  43/ 7/12
151.00   *  18/ 6/10  22/ 2/ 5  24/ 9/ 0  26/ 9/ 9  30/ 0/ 8  32/ 7/ 6  34/ 9/ 2  36/ 7/ 3  38/ 2/ 5  39/ 7/ 0  41/10/ 0  43/ 5/ 8
152.00   *  17/10/ 5  21/ 5/12  24/ 0/ 7  26/ 1/ 1  29/ 4/ 5  31/11/10  34/ 1/15  36/ 0/ 9  37/ 8/ 6  39/ 1/13  41/ 6/ 5  43/ 3/ 0

153.00   *  17/ 2/ 4  20/ 9/ 5  23/ 3/15  25/ 4/10  28/ 8/ 2  31/ 3/13  33/ 6/ 9  35/ 5/12  37/ 2/ 4  38/ 8/ 6  41/ 2/ 7  43/ 0/ 6
154.00   *  16/ 6/ 6  20/ 1/ 0  22/ 7/ 8  24/ 8/ 3  27/11/13  30/ 7/13  32/11/ 0  34/10/12  36/ 7/13  38/ 2/11  40/10/ 5  42/ 9/ 9
155.00   *  15/10/13  19/ 4/12  21/11/ 2  23/11/13  27/ 3/ 7  29/11/11  32/ 3/ 5  34/ 3/ 8  36/ 1/ 4  37/ 8/12  40/ 5/15  42/ 6/ 8

156.00   *  15/ 3/ 8  18/ 8/12  21/ 2/14  23/ 3/ 7  26/ 7/ 2  29/ 3/ 9  31/ 7/ 8  33/ 8/ 2  35/ 6/ 7  37/ 2/10  40/ 1/ 4  42/ 3/ 2
157.00   *  14/ 8/ 6  18/ 0/15  20/ 6/12  22/ 7/ 3  25/10/14  28/ 7/ 6  30/11/ 9  33/ 0/10  34/11/ 6  36/ 8/ 3  39/ 8/ 5  41/11/10
158.00   *  14/ 1/14  17/ 5/ 7  19/10/13  21/11/ 1  25/ 2/10  27/11/ 4  30/ 3/ 9  32/ 4/15  34/ 4/ 3  36/ 1/ 9  39/ 3/ 2  41/ 7/13

159.00   *  13/ 7/ 4  16/10/ 1  19/ 3/ 1  21/ 3/ 1  24/ 6/ 7  27/ 3/ 1  29/ 7/ 8  31/ 9/ 2  33/ 8/12  35/ 6/10  38/ 9/10  41/ 3/11
160.00   *  13/ 1/ 5  16/ 3/ 2  18/ 7/ 9  20/ 7/ 3  23/10/ 5  26/ 6/14  28/11/ 6  31/ 1/ 3  33/ 1/ 2  34/11/10  38/ 3/14  40/11/ 7
161.00   *  12/ 7/10  15/ 8/ 5  18/ 0/ 2  19/11/ 7  23/ 2/ 3  25/10/10  28/ 3/ 2  30/ 5/ 2  32/ 5/ 5  34/ 4/ 3  37/ 9/14  40/ 6/13

162.00   *  12/ 2/ 0  15/ 1/10  17/ 4/13  19/ 3/11  22/ 6/ 0  25/ 2/ 4  27/ 6/12  29/ 8/13  31/ 9/ 4  33/ 8/ 9  37/ 3/ 8  40/ 2/ 0
163.00   *  11/ 8/11  14/ 7/ 2  16/ 9/11  18/ 8/ 2  21/ 9/15  24/ 5/14  26/10/ 5  29/ 0/ 6  31/ 1/ 1  33/ 0/11  36/ 8/13  39/ 8/13
164.00   *  11/ 3/ 7  14/ 0/12  16/ 2/10  18/ 0/ 9  21/ 1/13  23/ 9/ 7  26/ 1/11  28/ 3/13  30/ 4/10  32/ 4/ 9  36/ 1/13  39/ 3/ 7

165.00   *  10/10/ 7  13/ 6/ 9  15/ 7/11  17/ 5/ 3  20/ 5/12  23/ 1/ 0  25/ 5/ 1  27/ 7/ 2  29/ 8/ 0  31/ 8/ 3  35/ 6/ 7  38/ 9/11
166.00   *  10/ 5/ 9  13/ 0/ 9  15/ 0/15  16/ 9/14  19/ 9/11  22/ 4/ 8  24/ 8/ 4  26/10/ 4  28/11/ 4  30/11/10  34/10/11  38/ 3/11
167.00   *  10/ 0/14  12/ 6/12  14/ 6/ 5  16/ 2/10  19/ 1/ 9  21/ 7/14  23/11/ 7  26/ 1/ 4  28/ 2/ 4  30/ 2/12  34/ 2/10  37/ 9/ 6

168.00   *   9/ 8/ 5  12/ 1/ 0  13/11/13  15/ 7/ 8  18/ 5/ 9  20/11/ 4  23/ 2/ 7  25/ 4/ 2  27/ 5/ 1  29/ 5/10  33/ 6/ 3  37/ 2/13
169.00   *   9/ 3/15  11/ 7/ 8  13/ 5/ 7  15/ 0/ 7  17/ 9/ 9  20/ 2/10  22/ 5/ 7  24/ 6/14  26/ 7/12  28/ 8/ 5  32/ 9/ 7  36/ 7/14
170.00   *   8/11/11  11/ 2/ 3  12/11/ 4  14/ 5/ 9  17/ 1/10  19/ 6/ 0  21/ 8/ 6  23/ 9/ 9  25/10/ 5  27/10/14  32/ 0/ 5  36/ 0/11

171.00   *   8/ 7/10  10/ 9/ 0  12/ 5/ 4  13/10/13  16/ 5/13  18/ 9/ 8  20/11/ 6  23/ 0/ 4  25/ 0/12  27/ 1/ 4  31/ 3/ 2  35/ 5/ 3
172.00   *   8/ 3/11  10/ 4/ 0  11/11/ 6  13/ 4/ 5  15/10/ 2  18/ 1/ 0  20/ 2/ 5  22/ 2/14  24/ 3/ 3  26/ 3/ 7  30/ 5/ 9  34/ 9/ 6
173.00   *   7/11/14   9/11/ 2  11/ 5/11  12/ 9/15  15/ 2/10  17/ 4/10  19/ 5/ 6  21/ 5/ 8  23/ 5/ 8  25/ 5/ 9  29/ 7/13  34/ 1/ 5

174.00   *   7/ 8/ 3   9/ 6/ 7  11/ 0/ 3  12/ 3/11  14/ 7/ 4  16/ 8/ 6  18/ 8/ 8  20/ 8/ 3  22/ 7/13  24/ 7/10  28/ 9/13  33/ 4/15
175.00   *   7/ 4/10   9/ 1/14  10/ 6/13  11/ 9/11  14/ 0/ 2  16/ 0/ 5  17/11/12  19/10/15  21/10/ 2  23/ 9/11  27/11/12  32/ 8/ 5
176.00   *   7/ 1/ 3   8/ 9/ 7  10/ 1/11  11/ 3/14  13/ 5/ 3  15/ 4/ 8  17/ 3/ 3  19/ 1/12  21/ 0/ 8  22/11/11  27/ 1/ 7  31/11/ 6

177.00   *   6/ 9/13   8/ 5/ 3   9/ 8/12  10/10/ 6  12/10/ 9  14/ 8/14  16/ 6/12  18/ 4/12  20/ 2/15  22/ 1/11  26/ 3/ 1  31/ 2/ 3
178.00   *   6/ 6/ 9   8/ 1/ 1   9/ 4/ 0  10/ 5/ 1  12/ 4/ 3  14/ 1/ 7  15/10/ 9  17/ 7/14  19/ 5/ 7  21/ 3/12  25/ 4/10  30/ 4/12
179.00   *   6/ 3/ 7   7/ 9/ 2   8/11/ 7  10/ 0/ 0  11/10/ 1  13/ 6/ 5  15/ 2/ 9  16/11/ 2  18/ 8/ 1  20/ 5/13  24/ 6/ 2  29/ 7/ 0
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6X Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650- 111-13-03

book 1 FRAME 10 OF 112

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174.00  *   7/ 8/ 3   9/ 6/ 7  11/ 0/ 3  12/ 3/11  14/ 7/ 4  16/ 8/ 6
175.00  *   7/ 4/10   9/ 1/14  10/ 6/13  11/ 9/11  14/ 0/ 2  16/ 0/ 5  17/11/12  19/10/15  21/10/ 2  23/ 9/11  27/11/12  32/ 8/ 5
176.00  *   7/ 1/ 3   8/ 9/ 7  10/ 1/11  11/ 3/14  13/ 5/ 3  15/ 4/ 8  17/ 3/ 3  19/ 1/12  21/ 0/ 8  22/11/11  27/ 1/ 7  31/11/ 6

177.00  *   6/ 9/13   8/ 5/ 3   9/ 8/12  10/10/ 6  12/10/ 9  14/ 8/14  16/ 6/12  18/ 4/12  20/ 2/15  22/ 1/11  26/ 3/ 1  31/ 2/ 3
178.00  *   6/ 6/ 9   8/ 1/ 1   9/ 4/ 0  10/ 5/ 1  12/ 4/ 3  14/ 1/ 7  15/10/ 9  17/ 7/14  19/ 5/ 7  21/ 3/12  25/ 4/10  30/ 4/12
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BSCO FARRELL CONTAINER H 4650 AFT                      DATE  3/ 1/78                                  PAGE NO  6

FRAME   *    WL        WL        WL        WL        WL        WL        WL        WL        WL        WL        WL        WL
NUMBER  *  1/ 0/ 0   2/ 0/ 0   3/ 0/ 0   4/ 0/ 0   6/ 0/ 0   8/ 0/ 0  10/ 0/ 0  12/ 0/ 0  14/ 0/ 0  16/ 0/ 0  20/ 0/ 0  24/ 0/ 0
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************************************************************************************************************************************
        *

180.00  *   6/ 0/ 3   7/ 5/ 4   8/ 7/ 2   9/ 7/ 3  11/ 4/ 3  12/11/ 7  14/ 6/12  16/ 2/ 8  17/10/13  19/ 8/ 0  23/ 7/ 9  28/ 9/ 1
181.00  *   5/ 8/11   7/ 1/ 9   8/ 3/ 1   9/ 2/10  10/10/ 8  12/ 4/11  13/11/ 2  15/ 6/ 1  17/ 1/11  18/10/ 5  22/ 9/ 0  27/10/15
182.00  *   5/ 5/ 5   6/10/ 0   7/11/ 1   8/10/ 2  10/ 5/ 1  11/10/ 3  13/ 3/11  14/ 9/14  16/ 4/12  18/ 0/11  21/10/ 8  27/ 0/10

183.00  *   5/ 2/ 1   6/ 6/ 9   7/ 7/ 4   8/ 5/14   9/11/12  11/ 3/15  12/ 8/ 8  14/ 1/13  15/ 7/14  17/ 3/ 2  20/11/15  26/ 2/ 2
184.00  *   4/10/15   6/ 3/ 4   7/ 3/ 9   8/ 1/12   9/ 6/11  10/ 9/14  12/ 1/ 8  13/ 5/15  14/11/ 4  16/ 5/13  20/ 1/ 8  25/ 3/ 8
185.00  *   4/ 7/15   6/ 0/ 0   7/ 0/ 0   7/ 9/12   9/ 1/12  10/ 4/ 0  11/ 6/11  12/10/ 4  14/ 2/12  15/ 8/ 9  19/ 3/ 2  24/ 4/14

186.00  *   4/ 5/ 1   5/ 8/14   6/ 8/ 9   7/ 5/15   8/ 9/ 1   9/10/ 6  11/ 0/ 2  12/ 2/12  13/ 6/ 7  14/11/ 8  18/ 4/13  23/ 6/ 1
187.00  *   4/ 2/ 4   5/ 5/13   6/ 5/ 2   7/ 2/ 2   8/ 4/ 8   9/ 5/ 0  10/ 5/13  11/ 7/ 7  12/10/ 5  14/ 2/10  17/ 6/12  22/ 7/ 4
188.00  *   3/11/13   5/ 2/15   6/ 1/14   6/10/ 8   8/ 0/ 2   8/11/12   9/11/10  11/ 0/ 7  12/ 2/ 7  13/ 6/ 0  16/ 8/12  21/ 8/ 8

189.00  *   3/ 9/ 8   5/ 0/ 2   5/10/10   6/ 6/15   7/ 7/14   8/ 6/12   9/ 5/12  10/ 5/10  11/ 6/13  12/ 9/ 9  15/10/15  20/ 9/12
190.00  *   3/ 7/ 5   4/ 9/ 6   5/ 7/ 8   6/ 3/ 8   7/ 3/12   8/ 1/14   9/ 0/ 1   9/11/ 0  10/11/ 6  12/ 1/ 6  15/ 1/ 4  19/10/15
191.00  *   3/ 5/ 3   4/ 6/11   5/ 4/ 8   6/ 0/ 2   6/11/12   7/ 9/ 3   8/ 6/ 8   9/ 4/10  10/ 4/ 2  11/ 5/ 6  14/ 3/13  19/ 0/ 4

192.00  *   3/ 3/ 2   4/ 4/ 2   5/ 1/ 8   5/ 8/13   6/ 7/13   7/ 4/10   8/ 1/ 3   8/10/ 8   9/ 9/ 2  10/ 9/ 9  13/ 6/ 8  18/ 1/ 9
193.00  *   3/ 1/ 3   4/ 1/10   4/10/10   5/ 5/10   6/ 4/ 1   7/ 0/ 3   7/ 8/ 1   8/ 4/ 9   9/ 2/ 6  10/ 2/ 0  12/ 9/ 7  17/ 2/15
194.00  *   2/11/ 4   3/11/ 3   4/ 7/13   5/ 2/ 8   6/ 0/ 6   6/ 7/14   7/ 3/ 1   7/10/12   8/ 7/13   9/ 6/10  12/ 0/ 8  16/ 4/ 6

195.00  *   2/ 9/ 7   3/ 8/12   4/ 5/ 0   4/11/ 6   5/ 8/12   6/ 3/12   6/10/ 4   7/ 5/ 3   8/ 1/ 7   8/11/ 7  11/ 3/13  15/ 5/14
196.00  *   2/ 7/12   3/ 6/ 7   4/ 2/ 5   4/ 8/ 7   5/ 5/ 4   5/11/11   6/ 5/ 9   6/11/13   7/ 7/ 5   8/ 4/ 8  10/ 7/ 5  14/ 7/ 8
197.00  *   2/ 6/ 1   3/ 4/ 3   3/11/11.  4/ 5/ 8   5/ 1/13   5/ 7/12   6/ 1/ 0   6/ 6/ 9   7/ 1/ 6   7/ 9/13   9/11/ 0  13/ 9/ 3

198.00  *   2/ 4/11   3/ 2/ 5   3/ 9/ 9   4/ 3/ 2   4/11/ 1   5/ 4/ 9   5/ 9/ 5   6/ 2/ 6   6/ 8/ 9   7/ 4/ 6   9/ 4/ 5  13/ 0/11
199.00  *   2/ 3/ 5   3/ 0/ 8   3/ 7/ 6   4/ 0/12   4/ 8/ 5   5/ 1/ 6   5/ 5/12   5/10/ 5   6/ 3/14   6/11/ 1   8/ 9/11  12/ 4/ 4
200.00  *   2/ 2/ 1   2/10/11   3/ 5/ 5   3/10/ 8   4/ 5/10   4/10/ 5   5/ 2/ 4   5/ 6/ 6   5/11/ 6   6/ 5/15   8/ 3/ 5  11/ 7/15

201.00  *   2/ 0/12   2/ 8/14   3/ 3/ 4   3/ 8/ 3   4/ 2/15   4/ 7/ 5   4/10/14   5/ 2/ 8   5/ 7/ 0   6/ 1/ 0   7/ 9/ 0  10/11/12
202.00  *   1/11/ 9   2/ 7/ 3   3/ 1/ 4   3/ 6/ 0   4/ 0/ 5   4/ 4/ 5   4/ 7/ 8   4/10/13   5/ 2/12   5/ 8/ 3   7/ 2/14  10/ 3/10
203.00  *   1/10/ 8   2/ 5/ 9   2/11/ 4   3/ 3/11   3/ 9/10   4/ 1/ 4   4/ 4/ 3   4/ 7/ 2   4/10/10   5/ 3/ 8   6/ 8/13   9/ 7/ 8

204.00  *   1/ 9/ 9   2/ 4/ 2   2/ 9/ 7   3/ 1/ 9   3/ 7/ 2   3/10/ 9   4/ 1/ 5   4/ 3/15   4/ 7/ 1   4/11/ 7   6/ 3/ 7   9/ 0/ 6
205.00  *   1/ 8/12   2/ 2/13   2/ 7/10   2/11/ 7   3/ 4/10   3/ 7/14   3/10/ 6   4/ 0/12   4/ 3/ 9   4/ 7/ 8   5/10/ 2   8/ 5/ 5
206.00  *   1/ 8/ 0   2/ 1/ 9   2/ 5/14   2/ 9/ 4   3/ 2/ 1   3/ 5/ 3   3/ 7/ 8   3/ 9/11   4/ 0/ 3   4/ 3/12   5/ 4/15   7/10/ 4

207.00  *   1/ 7/ 4   2/ 0/ 5   2/ 4/ 2   2/ 7/ 0   2/11/ 6   3/ 2/ 6   3/ 4/10   3/ 6/10   3/ 8/15   4/ 0/ 0   4/11/13   7/ 3/ 6
208.00  *   1/ 6/ 5   1/10/14   2/ 2/ 3   2/ 4/12   2/ 8/12   2/11/10   3/ 1/12   3/ 3/10   3/ 5/10   3/ 8/ 6   4/ 6/13   6/ 8/ 7
209.00  *   1/ 5/ 4   1/ 9/ 4   2/ 0/ 3   2/ 2/ 7   2/ 6/ 1   2/ 8/12   2/10/13   3/ 0/ 9   3/ 2/ 6   3/ 4/12   4/ 1/14   6/ 1/11

210.00  *   1/ 4/ 1   1/ 7/ 6   1/10/ 0   2/ 0/ 2   2/ 3/ 6   2/ 5/14   2/ 7/14   2/ 9/ 9   2/11/ 3   3/ 1/ 2   3/ 9/ 1   5/ 7/ 2
211.00  *   1/ 2/ 7   1/ 5/ 3   1/ 7/ 9   1/ 9/ 8   2/ 0/ 9   2/ 2/15   2/ 4/14   2/ 6/ 8   2/ 7/15   2/ 9/ 9   3/ 4/ 5   5/ 0/11
212.00  *   1/ 0/ 8   1/ 2/14   1/ 5/ 1   1/ 6/15   1/ 9/14   2/ 0/ 3   2/ 2/ 2   2/ 3/11   2/ 4/15   2/ 6/ 4   3/ 0/ 3   4/ 7/ 0
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BSCO FARRELL CONTAINER H 4650 AFT                      DATE  3/ 1/78                                  PAGE NO  7

FRAME   *    WL        WL        WL        WL        WL        WL        WL        WL        WL        WL        WL        WL
NUMBER  *  1/ 0/ 0   2/ 0/ 0   3/ 0/ 0   4/ 0/ 0   6/ 0/ 0   8/ 0/ 0  10/ 0/ 0  12/ 0/ 0  14/ 0/ 0  16/ 0/ 0  20/ 0/ 0  24/ 0/ 0
        *
************************************************************************************************************************************
        *

213.00  *   0/10/ 1   1/ 0/ 4   1/ 2/ 5   1/ 4/ 2   1/ 7/ 1   1/ 9/ 6   1/11/ 6   2/ 0/14   2/ 1/14   2/ 2/15   2/ 8/ 2   4/ 1/ 7
214.00  *   0/ 7/ 3   0/ 9/ 5   0/11/ 5   1/ 1/ 2   1/ 4/ 1   1/ 6/ 7   1/ 8/ 8   1/10/ 1   1/10/14   1/11/ 9   2/ 4/ 2   3/ 7/15
215.00  *   0/ 3/14   0/ 6/ 1   0/ 8/ 1   0/ 9/13   1/ 0/15   1/ 3/ 8   1/ 5/11   1/ 7/ 3   1/ 7/12   1/ 8/ 3   2/ 0/ 0   3/ 2/10

216.00  * ***/**/**   0/ 2/ 7   0/ 4/ 7   0/ 6/ 5   0/ 9/11   1/ 0/ 7   1/ 2/12   1/ 4/ 5   1/ 4/11   1/ 4/11   1/ 7/12   2/ 9/ 6
217.00  * ***/**/** ***/**/** ***/**/**   0/ 2/ 9   0/ 6/ 2   0/ 9/ 3   0/11/13   1/ 1/ 6   1/ 1/ 9   1/ 1/ 3   1/ 3/ 5   2/ 4/ 6
218.00  * ***/**/** ***/**/** ***/**/** ***/**/**   0/ 2/ 8   0/ 5/14   0/ 8/11   0/10/ 6   0/10/ 6   0/ 9/10   0/10/11   1/11/ 3

219.00  * ***/**/** ***/**/** ***/**/** ***/**/** ***/**/**   0/ 2/ 6   0/ 5/ 9   0/ 7/ 6   0/ 7/ 4   0/ 6/ 1   0/ 5/13   1/ 5/ 6
220.00  * ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/**   0/10/ 9
221.00  * ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/** ***/**/**   0/ 2/ 0
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BSCO FARRELL CONTAINER H 4650 AFT                      DATE  3/ 1/78                                  PAGE NO  8

FRAME   *    WL        WL        WL        WL        WL        WL        WL        WL        WL        WL        WL        WL
NUMBER  * 28/ 0/ 0  32/ 0/ 0  36/ 0/ 0  40/ 0/ 0  44/ 0/ 0  48/ 0/ 0  52/ 0/ 0  56/ 0/ 0  60/ 0/ 0  64/ 0/ 0  68/ 0/ 0
        *
************************************************************************************************************************************
        *

114.48  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0
115.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
116.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

117.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
118.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
119.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

120.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
121.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
122.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

123.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
124.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
125.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

126.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
127.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
128.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

129.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
130.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
131.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

132.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
133.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
134.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

135.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
136.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
137.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

138.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
139.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
140.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

141.00  *  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
142.00  *  44/11/15  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
143.00  *  44/11/12  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**

144.00  *  44/11/ 6  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
145.00  *  44/10/15  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
146.00  *  44/10/ 5  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0  45/ 0/ 0 ***/**/** ***/**/**
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BSCO FARRELL CONTAINER H 4650 AFT                      DATE  3/ 1/78                                  PAGE NO  9

FRAME   *    WL        WL        WL        WL        WL        WL        WL        WL        WL        WL        WL        WL
NUMBER  * 28/ 0/ 0  32/ 0/ 0  36/ 0/ 0  40/ 0/ 0  44/ 0/ 0  48/ 0/ 0  52/ 0/ 0  56/ 0/ 0  60/ 0/ 0  64/ 0/ 0  68/ 0/ 0
        *
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6X Sep 1980
BUILDERS PLAN NO. H-4650-111-13-33
book FRAME 1 OF 16
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

CONSTRUCTION PORTFOLIO
SPECIAL REQUIREMENTS
H4650 ¢ H4651
DWG. NO. H4650-111-13-33

APPD - USCG LETTER 3.31.80

H-67
1

INDEX TO CONSTRUCTION PORTFOLIO

PAGE 1 ~ ABS RULES FOR HIGH STRENGTH STEELS (GRADES AH36, DH36, EH36)
PAGE 2 ~ DO DO DO DO D DO DO CONTINUED
PAGE 3 ~ HIGH STRENGTH STEEL ASTM A514 TYPE "J"
PAGE 4 ~ HIGH STRENGTH STEEL ASTM A514 TYPE "P"
PAGE 5 ~ HIGH STRENGTH STEEL ASTM A633 TYPE "E"
PAGE 6 ~ WELDING DECAL (USE OF FILLER METAL AND WELDING PROCEDURE

WELDING PROCEDURES LISTED BELOW:

CWE 101 - MANUAL METAL ARC WELDING OF A.B.S. HIGH STRENGTH STEEL TO HIGH STRENGTH STEEL; TO CARBON STEEL AND CARBON STEEL TO CARBON STEEL

CWE 108 - SHIELDED (MANUAL) METAL ARC WELDING OF HIGH STRENGTH QUENCHED AND TEMPERED STEEL; ASTM A514, TYPE J; A517 GRADE J (RQ-100A)

CWE 205 - SEMI-AUTOMATIC FLUX-CORE ARC WELDING OF A.B.S. GRADE AH, DH AND EH STEEL PLATES AND SHAPES; ALL GRADES. C-25 SHIELDING GAS.

CWE 207 - SEMI-AUTOMATIC FLUX-CORE ARC WELDING OF A.B.S., GRADE "EH PLATING TO A.B.S. GRADE EH PLATING.

CWE 301 - AUTOMATIC SUBMERGED ARC (SINGLE) WELDING HIGH STRENGTH STEEL A.B.S. GRADE "EH"

DRAWING H4650-111-13-26 - DISPLAY OF HIGH STRENGTH STEEL
DRAWING H4650-129-05-09 - NON - DESTRUCTIVE TESTING

A.BS. RULES FOR HIGH STRENGTH STEEL
GRADES - AH36 - DH36 - EH36

1. CHEMICAL COMPOSITION:

CARBON %	0.18 MAX.
MANGANESE %	0.90-1.60
PHOSPHORUS %	0.04 MAX.
SULFUR %	0.04 MAX.
SILICON %³	0.10-0.50
NICKEL %	0.40 MAX.
CHROMIUM %	0.25 MAX.
MOLYBDENUM %	0.08 MAX.
COPPER %	0.35 MAX.
COLUMBIUM % (NIOBIUM)	0.05 MAX.
VANADIUM %	0.10 MAX.

GENERAL: THE PROCESS OF MANUFACTURE, HEAT TREATMENT, (WHERE SPECIFIED), NUMBER OF TESTS AND SURFACE FINISH ARE TO MEET THE SAME REQUIREMENTS AS SPECIFIED FOR ORDINARY-STRENGTH STRUCTURAL STEEL

2. MECHANICAL PROPERTIES:

TENSILE STRENGTH: 71,000 - 90,000 P.S.I
YIELD POINT MIN. - 51,000 PSI
ELONGATION MIN. - 19% IN 8 IN. OR 22% IN 2 IN. OR 20% IN 5.65 $\sqrt{A}$ (A: AREA OF SPECIMEN)

3. HEAT TREATMENT:

COLUMBIUM (NIOBIUM) TREATED STEEL
AH 36 - NORMALIZING REQUIRED OVER (0.50 IN.)
DH 36 - NORMALIZING REQUIRED OVER (0.50 IN.)
EH 36 - NORMALIZED

VANADIUM TREATED STEEL
AH 36 - NORMALIZING NOT REQUIRED
DH 36 - NORMALIZING REQUIRED OVER (0.75 IN.)
EH 36 - NORMALIZED

4. IMPACT TEST ~ CHARPY V-NOTCH

	AH-36	DH-36	EH-36
TEMPERATURE	NONE REQD	-4°F	-40°F
ENERGY AVG. MIN. LONG'L SPECIMEN	DO	25 ft. lb.	25 ft. lb.
DO DO DO TRANSV. SPECIMEN	DO	17 ft. lb.	17 ft. lb.
NO. OF SPECIMENS	DO	3 FROM EACH [illegible]	3 FROM EACH PLATE

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FRAME 2 OF 16
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

5. APPLICATIONS:

(a) ORDINARY APPLICATIONS ~ PLATES (2.00 in) IN THICKNESS AND UNDER, WHERE INTENDED FOR ORDINARY APPLICATIONS, ARE TO BE OF THE FOLLOWING GRADES:

GRADE AH - ACCEPTABLE UP TO AND INCLUDING (0.75 in) IN THICKNESS. ACCEPTABLE OVER (0.75 in) UP TO AND INCLUDING (2.00 in) IN THICKNESS EXCEPT FOR THE BOTTOM, SHEER STRAKE, STRENGTH-DECK PLATING WITHIN THE MIDSHIP PORTION, AND OTHER MEMBERS WHICH MAY BE SUBJECT TO COMPARATIVELY HIGH STRESS.

GRADE DH & EH - ACCEPTABLE UP TO AND INCLUDING (2.00 in.) IN THICKNESS.

(b) SPECIAL APPLICATIONS:

PLATES (2.00 in) IN THICKNESS AND UNDER, WHERE REQUIRED ELSEWHERE IN THESE RULES TO BE OF SPECIAL MATERIAL OWING TO THEIR APPLICATION IN THE DECK AND SHELL PLATING ARE TO BE OF THE FOLLOWING GRADES:

GRADE AH AND DH - ACCEPTABLE UP TO AND INCLUDING (0.75 in) IN THICKNESS.

GRADE DH - ACCEPTABLE UP TO AND INCLUDING (1.08 in) IN THICKNESS, PROVIDED THE MATERIAL IS NORMALIZED. HOWEVER, NORMALIZING IS NOT REQUIRED FOR THICKNESS UP TO AND INCLUDING (0.75 in) IN THICKNESS UNLESS REQUIRED.

GRADE EH - ACCEPTABLE UP TO AND INCLUDING (2.00 in) IN THICKNESS.

(C) PLATES OVER (2.00 in) IN THICKNESS ARE TO BE PRODUCED TO SPECIALLY APPROVED SPECIFICATIONS...

(d) APPLICATIONS OF SHAPES AND BARS UNLESS OTHERWISE SPECIFIED, STEEL MEETING THE REQUIREMENTS OF GRADE AH SEMI-KILLED IS ACCEPTABLE.

ASTM A514 STEEL TYPE "J"

1. CHEMICAL COMPOSITION:

(MAXIMUM THICKNESS 1¼")

CARBON	0.12-0.21 %
MANGANESE	0.45-0.70 %
PHOSPHORUS	0.035 % MAX.
SULFUR	0.04 % MAX.
SILICON	0.20-0.35 %
MOLYBDENUM	0.50-0.65 %
BORON	0.001-0.005 %

2. MECHANICAL PROPERTIES:

a. TENSILE STRENGTH : 110 TO 130 KSI
b. YIELD POINT: 100 KSI. MIN.
c. ELONGATION:
2 INCH MIN. 18 %
d. BRINELL HARDNESS ~ 235 TO 293

3. HEAT TREATMENT:

THE MATERIAL SHALL BE HEAT TREATED TO CONFORM TO THE TENSILE AND HARDNESS BY HEATING TO NOT LESS THAN 1650°F QUENCHING IN WATER OR OIL AND TEMPERING AT NOT LESS THAN 1150°F. THE HEAT TREATMENT TEMPERATURES SHALL BE REPORTED ON THE TEST CERTIFICATE.

4. APPLICATION:

THIS SPECIFICATION COVERS QUENCHED AND TEMPERED ALLOY STEEL PLATES OF STRUCTURAL QUALITY IN THICKNESS OF 4" INCHES AND UNDER INTENDED PRIMARILY FOR USE IN WELDED BRIDGES AND OTHER STRUCTURES.

ASTM A514 STEEL TYPE "P"

1. CHEMICAL COMPOSITION:

MAXIMUM THICKNESS 4"

CARBON	0.12-0.21 %
MANGANESE	0.45-0.70 %
PHOSPHORUS	0.035 % MAX.
SULFUR	0.04 % MAX.
SILICON	0.20-0.35 %
NICKEL	1.20-1.50
CHROMIUM	0.85-1.20
MOLYBDENUM	0.45-0.60
BORON	0.001-0.005

2. MECHANICAL PROPERTIES:

(a.) TENSILE STRENGTH: 110 TO 130 KSI
(b) YIELD POINT:
TO 2½" THK. 100 KSI MIN.
OVER 2½" TO 4" THK 90 KSI MIN.
(C) ELONGATION:
2 INCH MIN. - TO 2½" THK INCL 18 %
2 INCH MIN. - OVER 2½" TO 4" THK 17 %
(d) BRINELL HARDNESS ~ 235 TO 293

3. HEAT TREATMENT:

THE MATERIAL SHALL BE HEAT TREATED TO CONFORM TO THE TENSILE AND HARDNESS BY HEATING TO NOT LESS THAN 1650°F, QUENCHING IN WATER OR OIL AND TEMPERING AT NOT LESS THAN 1150°F. THE HEAT TREATMENT TEMPERATURES SHALL BE REPORTED ON THE TEST CERTIFICATE

4. APPLICATION:

THIS SPECIFICATION COVERS QUENCHED AND TEMPERED ALLOY STEEL PLATES OF STRUCTURAL QUALITY IN THICKNESS OF 4" INCHES AND UNDER INTENDED PRIMARILY FOR USE IN WELDED BRIDGES AND OTHER STRUCTURES.

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Sep 1980

BUILDERS PLAN NO. H-4650-111-13-33

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

ASTM A633 TYPE "E" STEEL

1. CHEMICAL COMPOSITION:

CARBON	0.22 % MAX.
MANGANESE	1.15 - 1.50 %
PHOSPHORUS	0.04 % MAX.
SULPHUR	0.05 % MAX.
SILICON	0.15 - 0.50 %
VANADIUM	0.04 - 0.11 %
NITROGEN	0.01 - 0.03 %

2. MECHANICAL PROPERTIES:

(a) TENSILE STRENGTH:	OVER 4 TO 6 INCHES	75 TO 95 KSI
(b) YIELD POINT:	OVER 4 TO 6 INCHES	55KSI

(C) ELONGATION:

(1) IN 8 INCHES THE MIN. % IS 18 FOR MATERIAL THAT IS OVER 5/16" THK. AND FOR MATERIAL OVER 24" WIDE THE ELONGATION REQUIREMENT IS REDUCED 2 PERCENTAGE POINTS.

(2) IN 2 INCHES THE MIN. % IS 23 FOR MATERIAL 24" OR LESS IN WIDTH AND FOR MATERIAL WIDER THAN 24" THE ELONGATION REQUIREMENT IS REDUCED 2 PERCENTAGE POINTS.

3. HEAT TREATMENT:

THE MATERIAL SHALL BE NORMALIZED BY HEATING TO A SUITABLE TEMPERATURE WHICH PRODUCES AN AUSTENTIC STRUCTURE, BUT NOT EXCEEDING 1700°F HOLDING A SUFFICIENT TIME TO ATTAIN UNIFORM HEAT THROUGHOUT THE MATERIAL AND COOLING IN AIR.

GRADE "E" MATERIAL OVER 3 INCHES THICK SHALL BE DOUBLE NORMALIZED

4. APPLICATION:

RUDDER HORN

49974 (Rev.A 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING

THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C–25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860–0 Flux)		CWE 301 SAW (Single) CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

- I MATERIAL DESIGNATION, MA MB
- II MATERIAL DESIGNATION, AH DH EH
- III MATERIAL DESIGNATION, A–514
- IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3

BETHLEHEM STEEL CORPORATION

SPARROWS POINT SHIPYARD

WELDING ENGINEERING SECTION

WELDING PROCEDURE #CWE 101

Manual metal arc welding of A.B.S. high strength steel to high strength steel; to carbon steel and carbon steel to carbon steel.

7/25/73
APPROVED DATE

APPROVED USCG DATE

7/25/73
APPROVED DATE

APPROVED DATE

1.0 SCOPE

1.1 This procedure covers the details to be followed for joining high strength hull structural steel A.B.S. Grade EH36 to AH36, DH36 and EH36; also A.B.S. Grades AH36, DH36 or EH36 to A.B.S. Grades B, C or CS.

2.0 BASE MATERIAL

	BASE MATERIAL	SPECIFICATION
2.1	High Strength Plating A.B.S. AH36	A.B.S. Hull
2.2	High Strength Plating A.B.S. DH36	A.B.S. Hull
2.3	High Strength Plating A.B.S. EH36	A.B.S. Hull
2.4	Carbon Steel Plating A.B.S. B	A.B.S. Hull
2.5	Carbon Steel Plating A.B.S. C	A.B.S. Hull
2.6	Carbon Steel Plating A.B.S. CS	A.B.S. Hull
2.7	Carbon Steel Shapes A.B.S. All Grades	A.B.S. Hull

3.0 BASE MATERIAL AND APPLICABLE ELECTRODES

	BASE MATERIAL	TYPE WELD	ELECTRODES
3.1	High Strength to High Strength	Butt	AWS E-8018C-3
3.2	High Strength to High Strength	Fillets	AWS E-8018C-3; 7028
3.3	High Strength to Carbon Steel	Butt	AWS E-7018
3.4	High Strength to Carbon Steel	Fillets	AWS E-7018; 7028
3.5	Carbon Steel to Carbon Steel	All	AWS E-6011 & E-6027

3.6 All Electrodes shall be A.B.S. and/or U.S.C.G. approved

3.7 Electrode control shall be in accordance with C-WE-1.

4.0 WELDING PROCESS

4.1 Shielded metal-arc welding

5.0 CURRENT TYPE

5.1 Direct current reverse polarity or alternating current as required

6.0 WELDER QUALIFICATION

6.1 A.B.S. - U.S.C.G.

7.0 WELDING POSITION

7.1 All Positions

8.0 PREHEAT

8.1 Preheat to 100° to 125° when ambient temperature is below 32°F, or to control moisture when welding high strength steel and thick sections of carbon steel. Preheat may be applied with an oxy-acetylene torch.

9.0 PEENING

9.1 Peening may be used to correct distortion, but may not be used for root or cover pass on multiple pass welds. Peening should be done immediately after depositing and cleaning each weld pass.

10.0 PREPARATION OF BASE MATERIAL

10.1 Edges of plate or pipe to be prepared by oxy-acetylene cutting. Edges of plate, after cutting, need not be ground if reasonably free of gouges, burning scale or slag.

10.2 All joints to be welded shall be free of rust, grease, oil, paint, scale, moisture or other foreign material.

11.0 TACK WELDING

11.1 Tack welds in butt joints shall be avoided wherever possible. If tack welds are required in butt joints they shall be made with the same type electrode and same parameters as required for production welds.

12.0 JOINT WELDING DETAIL

12.1 The amperages, voltages and size of electrodes for welding joints in the different positions should normally be within the ranges shown in Table #1. Smaller or larger size electrodes may be used when required by special conditions or for adequate weld metal control.

12.2 Typical joint designs shall be in accordance with Figure #1.

13.0 WELDING DETAILS AND TECHNIQUE NOTES

13.1 Weld passes may be woven up to 2½ diameters of the core wire.

13.2 Each weld pass shall be cleaned of all slag or other foreign matter before deposition of additional passes.

13.3 Slag and spatter shall be removed from completed welds.

13.4 Undercut at the edges of completed welds shall be held to a minimum.

13.5 On the second side of double welded butt joints the root of the joint shall be arc-air gouged, ground or chipped to sound metal before applying the second side weld.

14.0 INSPECTION

14.1 All joint preparations shall be usually inspected by the welding Supervisor for conformance to Figure #1 prior to welding.

14.2 All completed welds shall be inspected for undercut, size, weld reinforcement (butts) and surface porosity.

14.3 Completed welds shall be N.D.T. inspected as required in accordance with A.B.S. and U.S.C.G. rules. Criteria for this inspection shall be developed by the Welding Engineering Department and maintained by the N.D.T. Department.

15.0 REPAIRS

15.1 Repairs to butt welds as to a result of visual, ultra-sonic or X-ray inspection shall meet the same requirements as the original weld.

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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

Page 4 of 9 Pages
PROCEDURE NO. CWE 101
DATE: 6/29/73

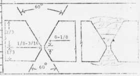
WELDING PROCEDURE QUALIFICATION

PROCESS SHIELDED METAL - ARC WELDING	BASE METAL SPECIFICATION A B S GRADE EH	WELDING POSITION VERTICAL
MATERIAL THICKNESS 1-1/4"	ELECTRODE TYPE E 8018C - 3	PREHEAT & INTERPASS TEMP. NONE 400° F. MAX.
SHIELDING CFH GAS CUP N.A.	TYPE OF CURRENT D C R P	WELDING SPECIFICATION ABS AND USCG
BACKING N.A.	POST HEAT TREATMENT NONE	
POWER SOURCE WESTINGHOUSE 500 AMP. RECTERFIER	FEEDER N.A.	GUN N.A.
WELDER'S NAME D.R. GEARHART	CLOCK NO. 02-30	

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1	1/8		135-140	22-24
2-4	5/32		155-160	23-25
5-6	5/32		150-155	23-25
7	1/8		135-140	22-24
8	5/32		155-165	23-25
9-10	5/32		150-155	23-25

JOINT DETAIL



SUMMARY OF TEST: N.D.T. X-RAY - SATISFACTORY

REDUCED SECTION TENSILES	1. ULTIMATE 79,000 P.S.I., FRACTURE IN PLATE 2. ULTIMATE 78,400 P.S.I., FRACTURE IN PLATE
BEND TEST	FACE: 1. ___ 2. ___ : ROOT: 1. ___ 2. ___ SIDE 1. SAT. 2. SAT. 3. SAT. 4. SAT.
IMPACT	@ MINUS 40 °F 46 , 47 , 43 , 32 , 37 AVERAGE 42 FOOT POUNDS
CHEMISTRY	C. N.A. MN. ___ SI. ___ NI. ___ CR. ___ MO. ___ VA. ___ CU. ___ OTHER ___

COMMENTS: BACK GOUGE SECOND SIDE TO CLEAN METAL BEFORE WELDING.

WELDING WITNESSED BY:	TESTING WITNESSED BY:
OTTO C. TIBBETTS [illegible] 6/29/73 L.P. [illegible] III U.S.C.G. 6/29/73 ROBERT H. ANDERSON, ABS 6/29/73	OTTO C. TIBBETTS [illegible] L.P. [illegible] [illegible]

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

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PROCEDURE NO. CWE 101
DATE: 6/29/73 .

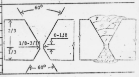
WELDING PROCEDURE QUALIFICATION

PROCESS SHIELDED METAL-ARC WELDING	BASE METAL SPECIFICATION ABS GRADE EH	WELDING POSITION OVERHEAD
MATERIAL THICKNESS 1-1/4"	ELECTRODE TYPE E 8018C-3	PREHEAT & INTERPASS TEMP. NONE 400°F. MAX.
SHIELDING CFH GAS CUP N.A.	TYPE OF CURRENT D C R P	WELDING SPECIFICATION ABS AND USCG
BACKING N.A.	POST HEAT TREATMENT NONE	
POWER SOURCE WESTINGHOUSE 500 AMP. RECTERFIER	FEEDER N.A.	GUN N.A.
WELDER'S NAME D.R. GEARHART	CLOCK NO. 02-30	

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1-2	1/8		135-140	21-23
3-7	5/32		150-155	22-24
8-9	1/8		135-140	21-23
10-14	5/32		150-155	22-24

JOINT DETAIL



SUMMARY OF TEST: N.D.T. X-RAY - SATISFACTORY

REDUCED SECTION TENSILES	1. ULTIMATE 79,000 P.S.I., FRACTURE IN PLATE 2. ULTIMATE 77,200 P.S.I., FRACTURE IN PLATE
BEND TEST	FACE: 1. ___ 2. ___ : ROOT: 1. ___ 2. ___ SIDE 1. SAT. 2. SAT. 3. SAT. 4. SAT.
IMPACT	@ MINUS 40 °F 38 , 43 , 57 , 29 , 62 AVERAGE 46 FOOT POUNDS
CHEMISTRY	C. N.A. MN. ___ SI. ___ NI. ___ CR. ___ MO. ___ VA. ___ CU. ___ OTHER ___

COMMENTS: BACK GOUGE SECOND SIDE TO CLEAN METAL BEFORE WELDING

WELDING WITNESSED BY:	TESTING WITNESSED BY:
OTTO C. TIBBETTS U.S.C.G. 6/29/73 L.P. [illegible] III U.S.C.G. 6/29/73 ROBERT H. ANDERSON, ABS 6/29/73	OTTO C. TIBBETTS U.S.C.G. [illegible] L.P. [illegible] U.S.C.G. [illegible] 7/2/73

PROCEDURE CWE-101
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TABLE #1

ELECTRODE TYPE	ELECTRODE SIZE	POSITION OF WELDING	WELDING CURRENT AMPS	WELDING CURRENT ARC-VOLTS	TYPE CURRENT
E-6011	1/8	Flat	95-115	20-23	AC or DCRP
	1/8	Vertical	90-110	20-23	AC or DCRP
	1/8	Over-Head	95-115	20-22	AC or DCRP
	5/32	Flat	135-155	21-24	AC or DCRP
	5/32	Vertical	125-145	21-24	AC or DCRP
	5/32	Over-Head	130-150	21-24	AC or DCRP
	3/16	Flat	160-200	22-24	AC or DCRP
	3/16	Vertical	155-175	21-23	AC or DCRP
	3/16	Over-Head	155-175	22-24	AC or DCRP
	7/32	Flat	200-250	23-25	AC or DCRP
E-6027	7/32	Flat	260-310	-	AC
	1/4	Flat	280-320	-	AC
E-7016	1/8	Flat	110-130	21-23	AC or DCRP
	1/8	Vertical	100-120	20-22	AC or DCRP
	1/8	Over-Head	110-130	21-23	AC or DCRP
	5/32	Flat	155-185	22-24	AC or DCRP
	5/32	Vertical	140-165	22-24	AC or DCRP
	5/32	Over-Head	145-170	22-24	AC or DCRP
	3/16	Flat	165-190	23-25	AC or DCRP
E-7018 or E-8018C-3	1/8	Flat	130-150	22-24	AC or DCRP
	1/8	Vertical	110-140	21-23	AC or DCRP
	1/8	Over-Head	110-140	21-23	AC or DCRP
	5/32	Flat	170-190	22-25	AC or DCRP
	5/32	Vertical	155-175	21-24	AC or DCRP
	5/32	Over-Head	160-180	21-24	AC or DCRP
	3/16	Flat	200-250	22-25	AC or DCRP
	7/32	Flat	230-265	23-26	AC or DCRP
E-7028	3/16	Flat	240-260	-	AC
	7/32	Flat	260-320	-	AC

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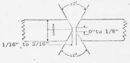
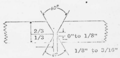
PROCEDURE CWE-101
PAGES 7 OF 9 PAGES

FIGURE #1

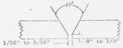
TYPICAL JOINT DESIGNS FOR MANUAL METAL ARC WELDING



PLATES 5/8" AND OVER



PLATES 5/8" AND OVER



PLATES 9/16" AND UNDER

RECOMMENDED FORM Q-1 MANUFACTURER'S RECORD OF WELDING PROCEDURE QUALIFICATION TESTS

PAGES 8 OF 9 PAGES

Specification No. CWE-101 Date 7/25/73
Welding Process Manual Metal Arc Manual or Machine Manual
Material Specification ABS EH to ABS EH of P-No. 1 to P-No. 1
Thickness (if pipe, diameter and wall thickness) 1¼"
Thickness Range this test qualifies Unlimited
Filler Metal Group No. F- F-4
Weld Metal Analysis No. A- 1 (8018C-3)
Describe Filler Metal if not included in Table Q-11.2 or QN-11.2 1.00 Nickel
For oxyacetylene welding–State if Filler Metal is silicon or aluminum killed.

FLUX OR ATMOSPHERE

Flux Trade Name or Composition N.A.
Inert Gas Composition N.A.
Trade Name N.A. Flow Rate N.A.
Is Backing Strip used? None
Preheat Temperature Range None
Interpass Temperature Range 300°F Max.
Postheat Treatment None

WELDING PROCEDURE

Single or Multiple Pass Multiple
Single or Multiple Arc
Position of Groove Vertical (See Pars. & Figs. Q-2 & Q-3, or QN-2 & QN-3)
(Flat, horizontal, vertical, or overhead; if vertical, state whether upward or downward)

FOR INFORMATION ONLY

Filler Wire–Diameter 1/8 and 5/32
Trade Name Airco 8018C-3
Type of Backing None
Forehand or Backhand Forehand

WELDING TECHNIQUES

Joint Dimensions Accord with (Parameters Attached)
amps ____ volts ____ inches per min. ____
Current ____ Polarity ____

REDUCED SECTION TENSILE TEST (Figs. Q-6 and QN-6)

Specimen No.	Dimensions		Area	Ultimate Total Load, lb.	Ultimate Unit Stress, psi	Character of Failure and Location
	Width	Thickness				
1	1.000	1.185	1185	93,600	79,000	In Plate
2	1.000	1.230	1230	96,400	78,400	In Plate

GUIDED BEND TESTS (Figs. Q-7.1, Q-7.2, QN-7.1, QN-7.2, QN-7.3)

Type and Figure No.	Result	Type and Figure No.	Result
Side Q-7.1	Satisfactory	Side Q-7.1	Satisfactory
Side Q-7.1	Satisfactory	Side Q-7.1	Satisfactory

Results of Filletweld Tests, Fig. Q-9(c) N.A.
Welder's Name D. R. Gearhart Clock No. 02-30 Stamp No. -
Who by virtue of these tests meets welder performance requirements.
Test Conducted by Bethlehem Steel Laboratory–Test No. 101-V
per Otto S. Tibbetts

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Signed ____ (Manufacturer)

Date 7/25/73 By ____

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code. Recommended Form Q-1 is available for purchase at ASME Headquarters.)
NOTE: Any essential variables in addition to those above shall be recorded.

Printed in U.S.A. (5/68) This Form is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

RECOMMENDED FORM Q-1 MANUFACTURER'S RECORD OF WELDING PROCEDURE QUALIFICATION TESTS

PAGE 9 OF 9 PAGES

Specification No. CWE 101 Date 7/25/73
Welding Process Manual Metal Arc Manual or Machine Manual
Material Specification ABS EH to ABS EH of P-No. 1 to P-No. 1
Thickness (if pipe, diameter and wall thickness) 1¼"
Thickness Range this test qualifies Unlimited
Filler Metal Group No. F- 4
Weld Metal Analysis No. A- 1
Describe Filler Metal if not included in Table Q-11.2 or QN-11.2 1.00 Nickel
For oxyacetylene welding–State if Filler Metal is silicon or aluminum killed.

FLUX OR ATMOSPHERE

Flux Trade Name or Composition N.A.
Inert Gas Composition N.A.
Trade Name N.A. Flow Rate N.A.
Is Backing Strip used? None
Preheat Temperature Range None
Interpass Temperature Range 300°F. Max.
Postheat Treatment None

WELDING PROCEDURE

Single or Multiple Pass Multiple
Single or Multiple Arc
Position of Groove Overhead (See Pars. & Figs. Q-2 & Q-3, or QN-2 & QN-3)
(Flat, horizontal, vertical, or overhead; if vertical, state whether upward or downward)

FOR INFORMATION ONLY

Filler Wire–Diameter 1/8 and 5/32
Trade Name Airco 8018C-3
Type of Backing None
Forehand or Backhand Forehand

WELDING TECHNIQUES

Joint Dimensions Accord with (Parameters Attached)
amps ____ volts ____ inches per min. ____
Current ____ Polarity ____

REDUCED SECTION TENSILE TEST (Figs. Q-6 and QN-6)

Specimen No.	Dimensions		Area	Ultimate Total Load, lb.	Ultimate Unit Stress, psi	Character of Failure and Location
	Width	Thickness				
1	1.000	1.205	1205	95,400	79,000	In Plate
2	1.000	1.210	1210	93,200	77,200	In Plate

GUIDED BEND TESTS (Figs. Q-7.1, Q-7.2, QN-7.1, QN-7.2, QN-7.3)

Type and Figure No.	Result	Type and Figure No.	Result
Side Q-7.1	Satisfactory	Side Q-7.1	Satisfactory
Side Q-7.1	Satisfactory	Side Q-7.1	Satisfactory

Results of Filletweld Tests, Fig. Q-9(c) N.A.
Welder's Name D. R. Gearhart Clock No. 02-30 Stamp No. -
Who by virtue of these tests meets welder performance requirements.
Test Conducted by Bethlehem Steel Laboratory–Test No. 101-O.H.
per Otto S. Tibbetts

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Signed ____ (Manufacturer)

Date 7/25/73 By ____

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code. Recommended Form Q-1 is available for purchase at ASME Headquarters.)
NOTE: Any essential variables in addition to those above shall be recorded.

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GRAPHIC SERVICES 871-4161
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BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

WELDING PROCEDURE QUALIFICATION

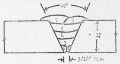
Page____of____Pages
PROCEDURE NO. CWE-101
DATE: 3/19/75

PROCESS SMAW	BASE METAL SPECIFICATION A.B.S. Grade "CS"	WELDING POSITION Vertical
MATERIAL THICKNESS 1"	ELECTRODE TYPE E-7018	PREHEAT & INTERPASS TEMP. None 400°F Max.
SHIELDING CFH GAS CUP N.A.	TYPE OF CURRENT D.C.R.P.	WELDING SPECIFICATION A.B.S. and U.S.C.G.
BACKING N.A.	POST HEAT TREATMENT NONE	
POWER SOURCE 500 Amp. Rectifier	FEEDER	GUN
WELDER'S NAME D. R. Gearhart	CLOCK NO. 02-63	

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1-3	1/8		120-150	22-24
4-7	5/32		145-165	23-25

JOINT DETAIL



SUMMARY OF TEST: N.D.T. X-Ray: Satisfactory

REDUCED SECTION TENSILES	1. ULTIMATE 64,800 P.S.I., FRACTURE In Plate	
	2. ULTIMATE 66,700 P.S.I., FRACTURE In Plate	
BEND TEST	FACE: 1.___ 2.___ : ROOT: 1.___ 2.___	
	SIDE 1. SAT. 2. SAT. 3. SAT. 4. SAT.	
IMPACT	@___°F ___, ___, ___, ___, ___ AVERAGE___ FOOT POUNDS	
CHEMISTRY	C.___ MN.___ SI.___ NI.___ CR.___ MO.___ VA.___ CU.___ OTHER___	

COMMENTS: Assembly Back Gouged, Ground and Welded with 7018

WELDING WITNESSED BY:	TESTING WITNESSED BY:
Robert Marks; A.B.S. Frank Doughen; U.S.C.G. Otto Tibbetts; B.S.Co.	Geo. Cowan; A.B.S. R. M. Maloney; U.S.C.G. Otto Tibbetts; B.S.Co.

BETHLEHEM STEEL CORPORATION

SPARROWS POINT SHIPYARD

WELDING ENGINEERING SECTION

WELDING PROCEDURE #CWE-108

SHIELDED (MANUAL) METAL ARC WELDING OF HIGH
STRENGTH QUENCHED AND TEMPERED STEEL;
ASTM A-514, TYPE J; A-517 GRADE J (RQ-100A)

3/21/78
APPROVED: B. S. CO. DATE

James Craun 3/22/78
APPROVED: B. S. CO. DATE

APPROVED: A. B. S. DATE

APPROVED: U.S.C.G. DATE

---

1. SCOPE

1.1 This procedure covers the details to be followed for joining high strength quenched and tempered steel; ASTM A-514, Type J; ASTM A-517, Grade J (RQ-100-A).

2. BASE MATERIAL — SPECIFICATION

	BASE MATERIAL	SPECIFICATION
2.1	Bethlehem RQ 100-A	ASTM A-514, Type J and ASTM A-517, Grade J
2.2	AH-36	A.B.S.

3. BASE MATERIAL & APPLICABLE ELECTRODES

	MATERIAL	JOINT TYPE	ELECTRODE TYPE
3.1	RQ 100-A to RQ 100-A	Butts	MIL-E-11018
3.2	RQ 100-A to RQ 100-A	Fillets	MIL-E-9018
3.3	AH-36 to RQ 100-A	Fillets	E-7018

4. ELECTRODES

4.1 All electrodes used shall be A.B.S. or military approved.

4.2 All electrodes shall be issued from an electrode holding oven. Exposure time for the electrodes shall not exceed 4 hours. Secure electrodes at the beginning of the shift. After 4 hours return unused electrodes to the wire room and obtain new or reconditioned electrodes from the electrode holding oven.

5.0 WELDING PROCESS

5.1 Shielded (manual) metal arc welding.

6.0 CURRENT TYPE

6.1 Direct current, reverse polarity.

7.0 WELDER QUALIFICATION

7.1 A.B.S.: U.S.C.G.: MIL-STD-248 or ASME in accordance with this procedure. (Mild steel base plate)

8.0 WELDING POSITION

8.1 All positions.

9.0 PREHEAT AND INTERPASS TEMPERATURE

9.1 Fillet Welds
- 9.1.1 Preheat shall be a minimum of 50°F.
- 9.1.2 Interpass temperature shall not exceed 300°F.

9.2 Butt Welds
- 9.2.1 Preheat and maintain a minimum of 125°F.
- 9.2.2 Interpass temperature shall not exceed 300°F.

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Sep 1980

BUILDERS PLAN NO. H-4650-111-13-33

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VITRO LABORATORIES DIVISION
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1400 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

10.0 PREPARATION OF BASE MATERIAL

10.1 Plate material preparations shall be oxy-fuel burning process.
10.2 All joints to be welded and weld areas shall be free of burning scale, rust, grease, oil, paint and/or mill scale.

11.0 TACK WELDS

11.1 Minimum preheat of 50°F. shall be applied for tacking.
11.2 Butts - Do NOT tack in butt joint, strong back only.
11.3 All tacks shall be made with MIL-E-11018 electrodes. Electrode control shall be in accordance with 3.3.

12.0 WELDING DETAILS AND TECHNIQUE NOTES

12.1 Weld passes may be woven up to 2½ times the diameter of the core wire.
12.2 Each pass shall be cleaned of all slag before depositing additional passes.
12.3 Slag and spatter shall be removed from completed welds.
12.4 Undercut at the edges of the completed weld shall be held to a minimum.

13.0 INSPECTION

13.1 All completed welds shall be inspected for undercut, size, weld reinforcement (butts) and surface porosity.
13.2 Completed welds shall be N.D.T. inspected as required in accordance with A.B.S. and U.S.C.G. rules. Criteria for this inspection shall be developed by the welding engineering department and maintained by the N.D.T. department.

14.0 REPAIRS

14.1 Repairs to butt welds as to a result of visual, ultra-sonic or x-ray inspection shall meet the same requirements as the original weld.

15.0 SPECIAL NOTE

15.1 Temper bead technique shall be used on all butt welds in ASTM-A-514 and ASTM-A-517 grade steels. See attached sketch.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND
WELDING PROCEDURE QUALIFICATION

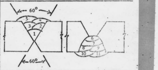
Page___of___Pages
PROCEDURE NO. CWE 108-2
DATE: 3/9/78

PROCESS S.M.A.W.	BASE METAL SPECIFICATION RQ 100-A	WELDING POSITION Vertical
MATERIAL THICKNESS 1"	ELECTRODE TYPE MIL-E-11018; RACO 11018	PREHEAT & INTERPASS TEMP. 50°F - 300°F. MAX.
SHIELDING CFH GAS CUP N.A.	TYPE OF CURRENT D.C.R.P.	WELDING SPECIFICATION A.B.S. AND U.S.C.G.
BACKING N.A.	POST HEAT TREATMENT None	
POWER SOURCE Westinghouse 500 D.C.	FEEDER N.A.	GUN N.A.
WELDER'S NAME John Ceri	CLOCK NO. 30-50	

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1-11	1/8		120-130	20-22

JOINT DETAIL



SUMMARY OF TEST: N.D.T. X-Ray - Satisfactory

REDUCED SECTION TENSILES
1. ULTIMATE 120,300 P.S.I.,FRACTURE In Weld
2. ULTIMATE 122,300 P.S.I.,FRACTURE In Weld

BEND TEST
FACE:1.___ 2.___ :ROOT:1.___ 2.___
SIDE 1. Sat. 2. Sat. 3. Sat. 4. Sat. .

IMPACT @ -20 °F 52 , ~~55~~ , ~~42~~ , 47 , 52 AVERAGE 50 1/3 FOOT POUNDS

CHEMISTRY C.___ MN.___ SI.___ NI.___ .CR.___ MO.___ VA.___ CU.___ OTHER___

COMMENTS: Impacts Plate -20°F; 21, 21, 21, 26, 20 Aug. 21

WELDING WITNESSED BY:
Otto Tibbetts - B.S. Co.
T. W. Josiah - U.S.C.G.

TESTING WITNESSED BY:
Otto Tibbetts - B.S.Co.
Bryan Matthews - A.B.S.
Eric D. Lamberson - U.S.C.G.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND
WELDING PROCEDURE QUALIFICATION

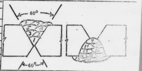
Page___of___Pages
PROCEDURE NO. CWE 108-2
DATE: 3/9/78

PROCESS S.M.A.W.	BASE METAL SPECIFICATION RQ 100-A	WELDING POSITION Overhead
MATERIAL THICKNESS 1"	ELECTRODE TYPE MIL-E-11018; RACO 11018	PREHEAT & INTERPASS TEMP. 50°F. - 300°F. MAX.
SHIELDING CFH GAS CUP N.A.	TYPE OF CURRENT D.C.R.P.	WELDING SPECIFICATION A.B.S. AND U.S.C.G.
BACKING N.A.	POST HEAT TREATMENT None	
POWER SOURCE Westinghouse 500 D.C.	FEEDER N.A.	GUN N.S.
WELDER'S NAME John Ceri	CLOCK NO. 30-50	

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1-19	1/8		120-130	20-22

JOINT DETAIL



SUMMARY OF TEST: N.D.T. X-Ray - Satisfactory

REDUCED SECTION TENSILES
1. ULTIMATE 127,400 P.S.I.,FRACTURE In Weld
2. ULTIMATE 135,500 P.S.I.,FRACTURE In Weld

BEND TEST
FACE:1.___ 2.___ :ROOT:1.___ 2.___
SIDE 1. Sat. 2. Sat. 3. Sat. 4. Sat. .

IMPACT @ -20 °F ~~51~~ , 38 , ~~28~~ , 36 , 43 AVERAGE 39 FOOT POUNDS

CHEMISTRY C.___ MN.___ SI.___ NI.___ .CR.___ MO.___ VA.___ CU.___ OTHER___

COMMENTS:___

WELDING WITNESSED BY:
Otto Tibbetts - B.S. Co.
T. W. Josiah - U.S.C.G.

TESTING WITNESSED BY:
Otto Tibbetts - B.S. Co.
Bryan Matthews - A.B.S.
Eric D. Lamberson - U.S.C.G.

6X Sep 1980

BUILDERS PLAN NO. H-4650-111-13-33

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FRAME 9 OF 16

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

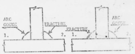
WELDING PROCEDURE QUALIFICATION

Page ____ of ____ Pages
PROCEDURE NO. CWE 108
DATE: 3/28/78

PROCESS S.M.A.W.	BASE METAL SPECIFICATION A.B.S. GRADE B	WELDING POSITION HORIZONTAL
MATERIAL THICKNESS 5/8"	ELECTRODE TYPE MIL-E-9018; RACO 9018M.	PREHEAT & INTERPASS TEMP. 50°F. MIN. 300°F. MAX.
SHIELDING CFH GAS CUP N.A.	TYPE OF CURRENT D.C.R.P.	WELDING SPECIFICATION A.B.S. and U.S.C.G.
BACKING N.A.	POST HEAT TREATMENT NONE	
POWER SOURCE 500 AMP. D.C. WESTINGHOUSE	FEEDER N.A.	GUN N.A.
WELDER'S NAME Wm. Chalfant	CLOCK NO. 30-423	JOINT DETAIL

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1-2	5/32		165-175	22-24



SUMMARY OF TEST: N.D.T.

REDUCED SECTION TENSILES	1. ULTIMATE ______ P.S.I., FRACTURE ______ 2. ULTIMATE ______ P.S.I., FRACTURE ______
BEND TEST	FACE: 1. ______ 2. ______ : ROOT: 1. ______ 2. ______ SIDE 1. ______ 2. ______ 3. ______ 4. ______.
IMPACT	@ ______ °F ______, ______, ______, ______, ______ AVERAGE ______ FOOT POUNDS
CHEMISTRY	C. ____ MN. ____ SI. ____ NI. ____ .CR. ____ MO. ____ VA. ____ CU. ____ OTHER ____

COMMENTS: Fracture exhibited complete penetration with no root porosity.

WELDING WITNESSED BY:	TESTING WITNESSED BY:
Otto Tibbetts; B.S. Co. Bryan Matthews; A.B.S.	Otto Tibbetts; B.S. Co. Bryan Matthews; A.B.S. Jim Josiah; U.S.C.G.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

WELDING PROCEDURE QUALIFICATION

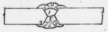
Page ____ of ____ Pages
PROCEDURE NO. CWE-108
DATE: ______

PROCESS	BASE METAL SPECIFICATION	WELDING POSITION
MATERIAL THICKNESS	ELECTRODE TYPE	PREHEAT & INTERPASS TEMP.
SHIELDING CFH GAS CUP	TYPE OF CURRENT	WELDING SPECIFICATION
BACKING	POST HEAT TREATMENT	
POWER SOURCE	FEEDER	GUN
WELDER'S NAME	CLOCK NO.	JOINT DETAIL

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS

BEADS 4 & 8
ARE TEMPER BEADS



SUMMARY OF TEST: N.D.T.

REDUCED SECTION TENSILES	1. ULTIMATE ______ P.S.I., FRACTURE ______ 2. ULTIMATE ______ P.S.I., FRACTURE ______
BEND TEST	FACE: 1. ______ 2. ______ : ROOT: 1. ______ 2. ______ SIDE 1. ______ 2. ______ 3. ______ 4. ______.
IMPACT	@ ______ °F ______, ______, ______, ______, ______ AVERAGE ______ FOOT POUNDS
CHEMISTRY	C. ____ MN. ____ SI. ____ NI. ____ .CR. ____ MO. ____ VA. ____ CU. ____ OTHER ____

COMMENTS: ______

WELDING WITNESSED BY:	TESTING WITNESSED BY:

BETHLEHEM STEEL CORPORATION

SPARROWS POINT SHIPYARD

WELDING ENGINEERING SECTION

WELDING PROCEDURE CWE 205

Semi-Automatic Flux-Core Arc Welding of A.B.S. Grade AH, DH and EH Steel Plates and Shapes; ALL GRADES, C-25 SHIELDING GAS

Otto Tibbetts 6/6/77
APPROVED DATE

P.R. Midgett 6-8-77
APPROVED USCG DATE

6/7/77
APPROVED DATE

6/8/77
APPROVED DATE

6X

Sep 1980

BUILDERS PLAN NO. H-4650-111-13-33

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FRAME 10 OF 16

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

1.0 SCOPE

1.1 This procedure covers the details for joining A.B.S. high strength plating and shapes with the flux-core arc welding process, using conventional joint designs.

2.0 BASE MATERIALS

		Specification
2.1	High strength plate and shapes; A.B.S. Grade AH	A.B.S. Hull
2.2	High strength plate and shapes; A.B.S. Grade DH	A.B.S. Hull
2.3	High strength plate and shapes; A.B.S. Grade EH	A.B.S. Hull

3.0 WELDING PROCESS

3.1 The welding shall be performed using the semi-automatic, flux-core arc welding process.

4.0 WELDING POSITIONS

4.1 This procedure qualifies welding in the flat position
4.2 This procedure qualifies welding in the vertical position. All vertical welds shall be made UP.

5.1 FILLER MATERIALS

5.1 The filler materials shall be Chemetron 8000: type 70T: G; AWS Specification 5.20.
5.2 All filler metal wire shall be listed on the American Bureau of Ships qualified products list (Q.P.L.)
5.3 This procedure qualifies the use of 1/16 (.062) inch diameter wire.

6.0 SHIELDING GAS

6.1 The shielding gas shall be a mixture of 75% Argon and 25% Carbon Dioxide (CO2).
6.2 The gas flow shall be adjusted to maintain an envelope of shielding gas around the welding arc and weld puddle.
6.3 The minimum gas flow shall be 30 CFH (Cubic Feet per Hour)
6.4 The gas flow shall be increased as required (above flow rate stated in the procedure) to assure adequate gas shielding in turbulent atmospheric surroundings.
6.5 Portable and/or non-portable wind deflectors shall be provided when the increase in wind velocity interfers with proper shielding of the weld puddle by the shielding gas.

7.0 CURRENT TYPES

7.1 The power source shall be constant potential direct current.
7.2 The polarity shall be reverse
7.3 Spray transfer current parameters shall be used.
7.4 The arc voltage and amperage shall be adjusted so that the metal transfer is in full spray and just above a globular transfer (short circuiting transfer).
7.5 The arc-voltage and amperage requirements will be increased with the increase in the welding cable length to obtain the proper metal spray transfer.

7.6 The arc-voltage and amperage requirements shall be adjusted as required by different manufacturer's 70T-G wire.

8.0 WELDING QUALIFICATION

8.1 All welding operators shall be qualified in accordance with A.B.S. and U.S.C.G. Rules.

9.0 PEENING

9.1 Peening may be used to correct distortion, butt shall not be used on the root or cover passes on multiple pass welds. Peening shall be done immediately after depositing and cleaning each weld pass. The peening tool shall be approximately 3/16" thick and rounded to approximately 1/4" radius.

10.0 PREPARATION OF BASE MATERIAL

10.1 The edges shall be prepared by oxy-acetylene burning, sawing, chipping or grinding.
10.2 Burned plate edges shall be reasonably free of gouges, and shall be free of burning slag (iron oxide).
10.3 Plate edges in the weld area shall be free of rust, grease, oil, paint, scale, moisture or other contaminating materials.

11.0 JOINT GEOMETRY DETAIL

11.1 The joint detail shall be in accordance with the applicable welding procedure qualification data sheet and acceptable joint design.

12.0 TACK WELDING

12.1 Tack welds in butt joints shall be avoided wherever possible.

13.0 PREHEAT

13.1 Preheat to 100° to 125° F. when ambient temperature is below 32° F. when welding heavy sections.
13.2 Preheat with a torch to remove moisture from the weld areas.

14.0 JOINT WELDING DETAIL

14.1 The welding detail shall be in accordance with the welding procedure qualification data sheet.
14.2 Vertical shall be made UP.
14.3 Slag shall be removed from each deposited weld bead before proceeding to weld the following bead.
14.4 Each deposited weld bead shall be visually inspected for porosity, excessive under-cut and worm tracks. Porosity and worm tracks (more than 1/16 inch in depth) shall be removed by arc-air gouging, grinding or chipping before welding is continued.
14.5 Weld bead widths shall not exceed 3/4 inch.
14.6 The electrode stick out shall be not less than 1/2 inch and not more than 1 inch.
14.7 The contact tip shall not be recessed more than 3/16 inch inside the end of the gas shielding nozzle end and not protrude beyond the end of the gas shielding nozzle.
14.8 The gas shielding nozzle and contact tip shall be inspected periodically for spatter build-up. The tip and nozzle shall be cleaned and coated with anti-spatter compound to retard spatter build-up.

15.0 INSPECTION

15.1 All joints shall be inspected prior to welding and shall meet all the requirements of the procedure and data sheet before welding is begun.
15.2 All completed welds shall be visually inspected for weld reinforcement (1/16 inch minimum, 5/32 inch maximum) surface porosity undercut, worm tracks and bead contour.
15.3 Joints shall be NDT inspected in accordance with A.B.S. and U.S.C.G. Rules. Criteria for this inspection shall be developed and maintained by the NDT Department.

16.0 REPAIRS

16.1 Repairs on butt joints may be made with the Flux-core arc welding process using this procedure or approved shielded metal arc welding procedures, (Manual Metal-Arc).
16.2 Repairs on butt joints as a result of visual or NDT inspection shall meet the requirements as the original weld joint.

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Sep 1980

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BUILDERS PLAN NO. H-4650-111-13-33

FRAME 11 OF 16

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

Page 4 of 5 Pages
PROCEDURE NO. CWE 205-3
DATE: 4/22/77

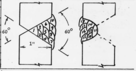
WELDING PROCEDURE QUALIFICATION

PROCESS Semi-Automatic Flux-Core Arc Welding	BASE METAL SPECIFICATION A.B.S. Grade "EH"	WELDING POSITION Horizontal
MATERIAL THICKNESS 1"	ELECTRODE TYPE Chemetron 8000	PREHEAT & INTERPASS TEMP. None 400 F. Max.
SHIELDING C-25 CFH 35 Mim. GAS CUP 5/8"	TYPE OF CURRENT D.C.R.P.	WELDING SPECIFICATION A.B.S. and U.S.C.G.
BACKING N.A.	POST HEAT TREATMENT None	
POWER SOURCE Gilliland 600 Amp.	FEEDER Gilliland	GUN Tweco
WELDER'S NAME John Cieri	CLOCK NO. 30-742	

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1-18	1/16		200-220	26-28

JOINT DETAIL



SUMMARY OF TEST: N.D.T. X-RAY -Satisfactory

REDUCED SECTION TENSILES
1. ULTIMATE 79,200 P.S.I., FRACTURE In Plate
2. ULTIMATE 80,200 P.S.I., FRACTURE In Plate

BEND TEST FACE: 1.____ 2.____ : ROOT: 1.____ 2.____
SIDE 1. Sat. 2. Sat. 3. Sat. 4. Sat. .

IMPACT @ -4 °F ~~36~~, 36, 38, 42, ~~42~~ AVERAGE 38 2/3 FOOT POUNDS

CHEMISTRY C.____ MN.____ SI.____ NI.____ .CR.____ MO.____ VA.____ CU.____ OTHER____

COMMENTS:

WELDING WITNESSED BY:	TESTING WITNESSED BY:
T. Brewton; A.B.S. Paul Midgett; U.S.C.G. Otto Tibbetts; B.S. Co.	Robert Marks, Jr; A.B.S. Paul Midgett; U.S.C.G. Otto Tibbetts: B.S.Co.

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BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

Page 5 of 5 Pages
PROCEDURE NO. CWE-205-2
DATE: 4/22/77

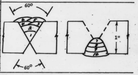
WELDING PROCEDURE QUALIFICATION

PROCESS Semi-Automatic Flux-Core Arc Welding	BASE METAL SPECIFICATION A.B.S. Grade "EH"	WELDING POSITION Vertical
MATERIAL THICKNESS 1"	ELECTRODE TYPE Chemetron 8000	PREHEAT & INTERPASS TEMP. None 400 F. Max.
SHIELDING C-25 CFH 35 Min. GAS CUP 5/8"	TYPE OF CURRENT D.C.R.P.	WELDING SPECIFICATION A.B.C. and U.S.C.G.
BACKING N.A.	POST HEAT TREATMENT None	
POWER SOURCE Gilliland 600 Amp.	FEEDER Gilliland	GUN Tweco
WELDER'S NAME John Cieri	CLOCK NO. 30-742	

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1-10	1/16		200-220	26-28

JOINT DETAIL



SUMMARY OF TEST: N.D.T. X-RAY - Satisfactory

REDUCED SECTION TENSILES
1. ULTIMATE 79,200 P.S.I., FRACTURE In Plate
2. ULTIMATE 81,800 P.S.I., FRACTURE In Plate

BEND TEST FACE: 1.____ 2.____ : ROOT: 1.____ 2.____
SIDE 1. SAT. 2. SAT. 3. SAT. 4. SAT. .

IMPACT @ -4 °F 35, 35, 35, ~~31~~, ~~35~~ AVERAGE 35 FOOT POUNDS

CHEMISTRY C.____ MN.____ SI.____ NI.____ .CR.____ MO.____ VA.____ CU.____ OTHER____

COMMENTS:

WELDING WITNESSED BY:	TESTING WITNESSED BY:
T. Brewton; A.B.S. Paul Midgett; U.S.C.G. Otto Tibbetts: B.S.Co.	Robert Marks, Jr.; A.B.S. Paul Midget; U.S.C.G. Otto Tibbetts; B.S.Co.

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BETHLEHEM STEEL CORPORATION

SPARROWS POINT SHIPYARD

WELDING ENGINEERING SECTION

WELDING PROCEDURE CWE 207

Semi-Automatic Flux-Core Arc Welding of A.B.S., Grade "EH" Plating to A.B.S. Grade "EH" Plating.

Otto L. Tibbetts 10/30/73 APPROVED DATE	Robert H Marks 10/30/73 APPROVED DATE
James Craun 10/30/73 APPROVED DATE	M. J. Cahill 10/30/73 APPROVED USCG DATE

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

6X Sep 1980

BUILDERS PLAN NO. H-4650-111-13-33

book

FRAME 12 OF 16

1.0 SCOPE

1.1 This procedure covers the details to be followed for the joining A.B.S. high strength plating and shapes with the flux-core arc welding process.

2.0 BASE MATERIALS

		SPECIFICATION
2.1	High strength steel plating and shapes, A.B.S. Grade AH	A.B.S. Hull
2.2	" " " " " " A.B.S. Grade DH	A.B.S. Hull
2.3	" " " " " " A.B.S. Grade EH	A.B.S. Hull

3.0 WELDING PROCESS

3.1 The welding shall be performed using the semi-automatic, flux-core arc welding process.

4.0 FILLER MATERIALS

4.1 The filler metal materials shall be Chemetron Inner-Shield Type 88-C3 or equivalent on all Butt welds.
4.2 Fillet welds shall be made with approved A.W.S. 70T-1 type wire.
4.3 The filler metal materials shall produce charpy impact values of a minimum 25 foot pounds at minus 40°F.
4.4 This procedure qualifies the use of 1/16 and 3/32 inch diameter wire.

5.0 SHIELDING GAS

5.1 The shielding shall be CO2 welding grade or other gases and/or mixtures as may be stated on qualification data sheets.

5.2 The gas flow shall be adjusted to maintain an envelope of shielding gas around the welding and weld puddle.
5.3 The minimum flow shall be 40 CFH (cubic feet per hour).
5.4 The gas flow shall be increased as required (above the flow rate stated in the procedure) to assure adequate gas shielding in turbulent atmospheric surroundings.
5.5 Portable and/or non-portable wind deflectors shall be provided when the increase in wind velocity interfers with proper shielding of the weld puddle by the shielding gas.

6.0 CURRENT TYPE

6.1 The power source shall be constant potential direct current.
6.2 The polarity shall be reverse.
6.3 The arc voltage and amperage shall be adjusted so that the metal transfer is a semi-spray.
6.4 The arc-voltage and amperage requirements shall be increased with the increase in welding cable length to obtain the proper metal transfer.
6.5 The arc-voltage and amperage requirements shall be adjusted as required by different manufacturer's wire.

7.0 WELDER QUALIFICATION

7.1 All welding operators shall be qualified in accordance with A.B.S. and U.S.C.G. Rules.

8.0 PREHEAT

8.1 Preheat with a torch to 100°F - 150°F. When ambient temperature is below 32°F.
8.2 Preheat as required to remove moisture from the weld area.

9.0 CLEANING

9.1 Remove rust and dirt from joint by wire brushing on shear strake joint before welding.

10.0 PEENING

10.1 Peening may be used to correct distortion, but shall not be used on the root and cover passes of multiple pass welds. Peening shall be done immediately after depositing and cleaning each weld pass.

10.2 The peening tool shall be approximately 3/16" thick and rounded to approximately 1/4" radius.

11.0 PREPARATION OF BASE MATERIAL

11.1 The edges may be prepared by oxy-acetylene burning, sawing, chipping or grinding.
11.2 Burned plate edges shall be reasonably free of gouges, and shall be free of burning slag (iron oxide).
11.3 Plate edges in the weld area shall be free of rust, grease, oil, paint, scale, moisture or other contaminating materials.

12.0 JOINT GEOMETRY DETAIL

12.1 The joint detail shall be in accordance with the applicable welding procedure qualification data sheet and/or applicable joint design.

13.0 TACK WELDS

13.1 All tack welds shall be made with AWS E-7016 electrodes.

13.2 Tack welds with E-7016 electrodes shall be permitted in the shear strake joint.
13.3 Tack welds in butt joints shall be avoided wherever possible.

14.0 JOINT WELDING DETAIL

14.1 The welding detail shall be in accordance with the welding procedure qualification data sheet.
14.2 Vertical welds shall be made up.
14.3 Slag shall be removed from each deposited weld bead before proceeding to weld the following bead.
14.4 Each deposited-weld bead shall be visually inspected for porosity, excessive undercut and worm tracks. Porosity shall be removed by arc-air gouging, grinding or chipping before welding is continued.
14.5 Each weld bead width shall not exceed 3/4 inch.
14.6 The electrode stick out shall not be less than 1/2 inch and not more than 1¼ inch.
14.7 The contact tip shall not be recessed more than 1/8 inch inside the end of the gas shielding nozzle end and not protrude beyond the end of the gas shielding nozzle.
14.8 The gas shielding nozzle and contact tip shall be inspected periodically for spatter build-up. The tip and nozzle shall be cleaned and coated with anti-spatter compound to retard spatter build-up.

15.0 INSPECTION

15.1 All joints shall be inspected prior to welding and shall meet all the requirements of the procedure and data sheet before welding is begun.
15.2 All completed welds shall be visually inspected for weld reinforcement (1/16 inch minimum, 5/32 inch maximum), surface porosity, undercut, worm tracks and bead contour.
15.3 Completed welds shall be NDT inspected in accordance with A.B.S. and U.S.C.G. Rules. Criteria for this inspection shall be developed and maintained by the NDT Department.

16.0 REPAIRS

16.1 Repairs on butt joints may be made with the Flux-Core Arc Welding process using this procedure or by approved manual metal arc welding procedures.
16.2 Repairs on butt joints as a result of visual or NDT inspection shall meet the requirements as the original weld joint.

6X
Sep 1980
BUILDERS PLAN NO. H-4650-111-13-33
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FRAME 13 OF 16

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

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PROCEDURE NO. 207
DATE: 10/18/73

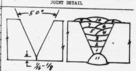
WELDING PROCEDURE QUALIFICATION

PROCESS SEMI-AUTOMATIC FLUX-CORE ARC WELDING
BASE METAL SPECIFICATION A.B.S. GRADE EH
WELDING POSITION FLAT
MATERIAL THICKNESS 1¼"
ELECTRODE TYPE CHEMETRON 88-C3; 1.00 Ni.
PREHEAT & INTERPASS TEMP. NONE 300°F. MAX.
SHIELDING CO2 CFH 40 GAS CUP ¾"
TYPE OF CURRENT DCRP
WELDING SPECIFICATION AWS. AND U.S.C.G.
BACKING NONE
POST HEAT TREATMENT NONE
POWER SOURCE 500 AMP. AUTO-ARC C.V.
FEEDER AUTO-ARC
GUN AUTO-ARC
WELDER'S NAME D.R. GEARHART
CLOCK NO. 02-30

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1	3/32		380	30-32
2-11	"		420-440	30-32

JOINT DETAIL



BACK SIDE AIR-ARC GOUGED AND/OR GROUND

SUMMARY OF TEST: N.D.T. X-RAY: SATISFACTORY
REDUCED SECTION TENSILES 1. ULTIMATE 80,000 P.S.I., FRACTURE IN PLATE
2. ULTIMATE 79,200 P.S.I., FRACTURE IN PLATE
BEND TEST FACE: 1. 2. : ROOT: 1. 2.
SIDE 1. SAT. 2. SAT. 3. SAT. 4. SAT.
IMPACT @ +14 °F 39, ~~34~~, ~~43~~, 40, 42 AVERAGE 40.3 FOOT POUNDS
CHEMISTRY C. MN. SI. NI. CR. MO. VA. CU. OTHER
COMMENTS:

WELDING WITNESSED BY:
Robert H. Marks, Jr. A.B.S.
Mike Cahill, U.S.C.G.
Otto S. Tibbets, B.S.Co.

TESTING WITNESSED BY:
Robert H. Marks, Jr. A.B.S.
Ron Miscavich, U.S.C.G.
Otto S. Tibbetts, B.S.Co.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

Page 5 of 5 Pages
PROCEDURE NO. 207
DATE: 10/18/73

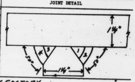
WELDING PROCEDURE QUALIFICATION

PROCESS SEMI-AUTOMATIC FLUX-CORE ARC WELDING
BASE METAL SPECIFICATION A.B.S. GRADE "EH"
WELDING POSITION FLAT
MATERIAL THICKNESS 1¼"
ELECTRODE TYPE CHEMETRON 88-C3; 1.00 NI.
PREHEAT & INTERPASS TEMP. NONE 300°F. MAX.
SHIELDING CO2 CFH 40 GAS CUP ¾"
TYPE OF CURRENT DCRP
WELDING SPECIFICATION A.B.S. AND U.S.C.G.
BACKING N.A.
POST HEAT TREATMENT NONE
POWER SOURCE AUTO-ARC 500 AMP. C.P.
FEEDER AUTO-ARC
GUN AUTO-ARC
WELDER'S NAME D.R. GEARHART
CLOCK NO. 02-30

WELD SEQUENCE

BEAD NO.	ELECT. SIZE	WIRE FEED	AMPS	ARC-VOLTS
1-4	3/32		420-440	30-32

JOINT DETAIL



SUMMARY OF TEST; N.D.T. MICRO: SATISFACTORY
REDUCED SECTION TENSILES 1. ULTIMATE P.S.I., FRACTURE
2. ULTIMATE P.S.I., FRACTURE
BEND TEST FACE: 1. 2. : ROOT: 1. 2.
SIDE 1. 2. 3. 4.
IMPACT @ °F , , , , AVERAGE FOOT POUNDS
CHEMISTRY C. MN. SI. NI. CR. MO. VA. CU. OTHER
COMMENTS:

WELDING WITNESSED BY:
Robert H. Marks, Jr. A.B.S.
Mike Cahill, U.S.C.G.
Otto S. Tibbetts, B.S.Co.

TESTING WITNESSED BY:
Robert H. Marks, Jr. -A.B.S.
Ron Miscavich - U.S.C.G.
Otto S. Tibbetts, B.S.Co.

RECOMMENDED FORM Q-1 MANUFACTURER'S RECORD OF WELDING PROCEDURE QUALIFICATION TESTS

Specification No. CWE 207
Date 10/30/73
Welding Process Flux-Core Arc Welding
Manual or Machine Semi-Automatic
Material Specification ABS EH to ABS EH
of P-No. 1 to P-No. 1
Thickness (if pipe, diameter and wall thickness) 1¼"
Thickness Range this test qualifies 1¼"
Filler Metal Group No. F- 4
Weld Metal Analysis No. A- 1.00% Nickel
Describe Filler Metal if not included in Table Q-11.2 or QN-11.2 1.00% Nickel
For oxyacetylene welding—State if Filler Metal is silicon or aluminum killed.

WELDING PROCEDURE

Single or Multiple Pass Multiple
Single or Multiple Arc Single
Position of Groove Flat (See Pars. & Figs. Q-2 & Q-3, or QN-2 & QN-3)
(Flat, horizontal, vertical, or overhead; if vertical, state whether upward or downward)

FLUX OR ATMOSPHERE

Flux Trade Name or Composition N.A.
Inert Gas Composition CO2
Trade Name CO2 Flow Rate 50 CFH
Is Backing Strip used? No
Preheat Temperature Range None
Interpass Temperature Range 300°F Max.
Postheat Treatment

FOR INFORMATION ONLY

Filler Wire—Diameter 3/32"
Trade Name Dual-Shield 88-C-3
Type of Backing None
Forehand or Backhand Forehand

WELDING TECHNIQUES Attached)
Joint Dimensions Accord with (Parameters
amps 440 volts 31 inches per min.
Current D.C. Polarity Reverse

REDUCED SECTION TENSILE TEST (Figs. Q-6 and QN-6)

Specimen No.	Dimensions		Area	Ultimate Total Load, lb.	Ultimate Unit Stress, psi	Character of Failure and Location
	Width	Thickness				
207-1	1.000	1.200	1.200	96,000	80,000	In Plate
207-2	1.000	1.215	1.215	96,200	79,200	In Plate

GUIDED BEND TESTS (Figs. Q-7.1, Q-7.2, QN-7.1, QN-7.2, QN-7.3)

Type and Figure No.	Result	Type and Figure No.	Result
1	Satisfactory	3	Satisfactory
2	Satisfactory	4	Satisfactory

Results of Filletweld Tests, Fig. Q-9(c) XI.A.
Welder's Name D. R. Gearhart Clock No. 02-30 Stamp No. -
Who by virtue of these tests meets welder performance requirements.
Test Conducted by Bethlehem Steel Laboratory—Test No. CWE 207
per R. Parsons

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Signed Bethlehem Steel
Sparrows Point Shipyard
(Manufacturer)
Date 10/30/73
By Otto S. Tibbetts

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code. Recommended Form Q-1 is available for purchase at ASME Headquarters.)
NOTE: Any essential variables in addition to those above shall be recorded.

Printed in U.S.A. (5/68) This Form is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

BETHLEHEM STEEL CORPORATION

Sparrows Point Shipyard

WELDING ENGINEERING SECTION

WELDING PROCEDURE #C-WE-301

AUTOMATIC SUBMERGED ARC (SINGLE)
WELDING HIGH STRENGTH STEEL
A.B.S. GRADE "EH"

11/21/73
APPROVED DATE

J Crane 11/21/73
APPROVED DATE

11/21/73
APPROVED JSCG DATE

Z.B. Matthews 11/21/73
APPROVED DATE

1.0 SCOPE

1.1 This procedure covers the details to be followed for joining A.B.S. Grade "EH" steel, by the automatic submerged arc process.

2.1 BASE MATERIAL	SPECIFICATION
2.1 High Strength Steel Plate	A.B.S. Grades "EH", "DH" & "A
Carbon Steel Plate	A.B.S. Grades B,C,C.N., and C.S.

3.0 BASE MATERIAL AND APPLICABLE ELECTRODE

3.1 BASE MATERIAL	TYPE WELD	ELECTRODE
A.B.S. Grade "EH" to A.B.S. Grade "EH"	Butt	Lincoln L61 RACO 120
A.B.S. Grade "EH" to A.B.S. Grade "DH"	Butt	Lincoln L61 RACO 120
A.B.S. Grade "EH" to A.B.S. Grades B,C,C.N., and C.S.	Butt	Lincoln L61 RACO 120
A.B.S. Grade "DH" to A.B.S. Grade "DH"	Butt	Lincoln L61 RACO 120
A.B.S. Grade "DH" to A.B.S. Grades B,C,C.N., and C.S.	Butt	Lincoln L61 RACO 120

4.0 FLUX

4.1 Lincoln 860

5.0 WELDING PROCESS

5.1 Automatic Submerged Arc (Single)

6.0 CURRENT TYPE

6.1 Direct Current Reverse Polarity

7.0 WELDING POSITION

7.1 Flat

8.0 WELDER QUALIFICATION

8.1 Not Required

9.0 PRE HEAT

9.1 Pre heat with torch to 100°F - 150°F. when ambient temperature is below 32°F. When ambient temperature is above 32°F. Pre heat as required to control moisture.

10.0 CLEANING

10.1 Before butting plates together power brush the edges to be joined by welding to remove burning slag, rust and dirt.

11.0 PREPARATION OF BASE MATERIAL

11.1 The edges or surfaces of the plates to be joined by welding shall be prepared by oxy-acetylene cutting, chipping or grinding.

11.2 The joints shall be free of grease, oil, rust, water, paint or dirt. The joint shall be wire brushed prior to welding.

11.3 Run off pads shall be attached to ends of all butts and shall be of sufficient length to insure full penetration.

12.0 TACK WELDING

12.1 All tack welds in butt joint shall be made with AWS E 80 18 C3 electrode and shall be kept to a minimum. Tacks shall be as small as practical to hold plate alignment.

13.0 JOINT WELDING DETAILS

13.1 The amperages, voltage and travel speeds shall be kept within the ranges shown on Figure #1.

14.0 WELDING DETAILS AND TECHNIQUE NOTES

14.1 Where more than one pass is required to complete a weld, all slag and flux remaining on each pass shall be thoroughly removed before making the succeeding pass. Any visible defects in any weld pass that might interfere with the making of a sound weld shall be removed by chipping or grinding before depositing the next pass.

14.2 Where a weld must cross another previously deposited weld, the previously deposited weld at the intersection shall be chipped to form a welding groove.

14.3 Undercut at the edges of the finished welds shall be held to a minimum.

15.0 INSPECTION

15.1 All completed welds shall be visually inspected for unacceptable undercut, blow holes, incomplete weld reinforcement and lack of fusion at edges of weld.

15.2 Joints shall be radiographed in accordance with A.B.S. and U.S.C.G. rules. Criteria for this inspection shall be developed and maintained by the N.D.T. Department.

6X
Sep 1980
BUILDERS PLAN NO. H-4650-111-13-33
book
FRAME 14 OF 16
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-111-13-33

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FRAME 15 OF 16

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

16.0 REPAIRS

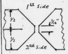
16.1 All unacceptable defects found by visual or N.D.T. inspection shall be removed by arc-air gouging, chipping or grinding and the repair weld made in accordance with Procedure #C-WE-101, "Shielded metal arc welding of A.B.S. Grade "EH"; conventional joint design".

16.2 All repair areas shall be visually inspected to the same requirements as original weld.

SUBMERGED ARC PROCESS (SINGLE ARC)

ELECTRODE - 5/32" Dia. Linde 81

FLUX - Linde 124

EDGE PREPARATION	PLATE THICKNESS	SIDE WELD	BEAD NUMBER	AMPERES	VOLTS	TRAVEL I.P.M.
	1¼"	1st	1	550-600	36-38	22-24
			2	550-600	36-38	22-24
			3	550-600	36-38	22-24
			4	550-600	36-38	22-24
			5	550-600	36-38	22-24
			6	550-600	36-38	22-24
			7	550-600	36-38	22-24
		2nd	1	75[illegible]-800	36-38	22-24
			2	550-600	36-38	22-24
			3	550-600	36-38	22-24
			4	550-600	36-38	22-24
			5	550-600	36-38	22-24
			6	550-600	36-38	22-24

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

PROCEDURE NUMBER C-WE-301

RECORD OF WELDING PROCEDURE QUALIFICATION

Specifications

Process AUTOMATIC SUBMERGED ARC WELDING

Base Metal Specification A.B.S. GRADE "EH"

Welding Position FLAT

Material Thickness 1¼"

Electrode Type LINDE 81

Preheat & Interpass Temp.

Shielding LINDE 124 FLUX

Type of Current DIRECT CURRENT REVERSE POLARITY

Welding Specification A.B.S. + U.S.C.G.

Other TRAVEL SPEED 21-25 I.P.M.

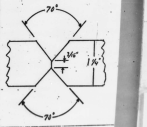
Welder's Name J. BUGOSH

Symbol and No. 30-733

Weld Sequence

Bead No.	Weld Layer	Electrode Size(Dia)	Current Type	Amps	Volts
1	1	5/32	D.C.R.P.	550-600	36-38
2	2	5/32	D.C.R.P.	550-600	36-38
3-4	3	5/32	D.C.R.P.	550-600	36-38
5-7	4	5/32	D.C.R.P.	550-600	36-28
	SECOND SIDE				
1	1	5/32	D.C.R.P.	750-800	36-38
2	2	5/32	D.C.R.P.	550-600	36-38
3-4	3	5/32	D.C.R.P.	550-600	36-38
5-6	4	5/32	D.C.R.P.	550-600	36-38

Joint Detail



Summary of Test Results

Reduced Section Tensile	Ultimate Strength 1. 80,200 P.S.I.	2. 79,600 P.S.I.
Root Bend	1.	2.
Face Bend	1.	2.
Side Bend	1. 4 SIDE BENDS ALL SATISFACTORY	2.
Charpy Impact	Average 50 Ft. Lbs.	Temperature -40 °F.
	Chemical Analysis	

Welding Witnessed By: J. MIANTA U.S.C.G.

Testing Witnessed By:
G. MARKS A.B.S.
J. MIANTA U.S.C.G.

RECOMMENDED FORM Q-1 MANUFACTURER'S RECORD OF WELDING PROCEDURE QUALIFICATION TESTS

Specification No. C-WE-301 Date 8/28/73
Welding Process SUBMERGED ARC Manual or Machine MACHINE
Material Specification A.B.S. GR. "EH" to A.B.S. GR. "EH" of P-No. 1 to P-No. 1
Thickness (if pipe, diameter and wall thickness) 1¼"
Thickness Range this test qualifies 3/4" TO 1 3/8"
Filler Metal Group No. F- 6
Weld Metal Analysis No. A- 1
Describe Filler Metal if not included in Table Q-11.2 or QN-11.2 LINDE 81 WIRE
For oxyacetylene welding—State if Filler Metal is silicon or aluminum killed.

FLUX OR ATMOSPHERE

Flux Trade Name or Composition LINDE 124
Inert Gas Composition
Trade Name Flow Rate
Is Backing Strip used? NONE
Preheat Temperature Range
Interpass Temperature Range
Postheat Treatment

WELDING PROCEDURE

Single or Multiple Pass MULTIPLE
Single or Multiple Arc SINGLE
Position of Groove FLAT (See Pars. & Figs. Q-2 & Q-3, or QN-2 & QN-3)
(Flat, horizontal, vertical, or overhead; if vertical, state whether upward or downward)

FOR INFORMATION ONLY

Filler Wire—Diameter 5/32"
Trade Name LINDE 81
Type of Backing NONE
Forehand or Backhand

WELDING TECHNIQUES

Joint Dimensions Accord with ATTACHED SKETCH
amps 550-600 volts 36-38 inches per min. 21-25
Current DIRECT Polarity REVERSE

REDUCED SECTION TENSILE TEST (Figs. Q-6 and QN-6)

Specimen No.	Dimensions		Area	Ultimate Total Load, lb.	Ultimate Unit Stress, psi	Character of Failure and Location
	Width	Thickness				
#1	1.010	1.215	1.225	98,200	80,200	BROKE OUTSIDE WELD
#2	1.020	1.235	1.260	100,400	79,600	"

GUIDED BEND TESTS (Figs. Q-7.1, Q-7.2, QN-7.1, QN-7.2, QN-7.3)

Type and Figure No.	Result	Type and Figure No.	Result
Q 7.1	SIDE BENDS (4)	SATISFACTORY	

Results of Filletweld Tests, Fig. Q-9(c)
Welder's Name J. BUGOSH Clock No. 30-733 Stamp No.
Who by virtue of these tests meets welder performance requirements.
Test Conducted by BETH. STEEL SHIPYARD Laboratory—Test No. C-WE-301-3
per L.B. MATTHEWS

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Signed BETHLEHEM STEEL SHIPYARD
(Manufacturer)

Date 8/28/73 By

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code. Recommended Form Q-1 is available for purchase at ASME Headquarters.)
NOTE: Any essential variables in addition to those above shall be recorded.

Printed in U.S.A. (5/68) This Form is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

6X Sep 1980

BUILDERS PLAN NO. H-4650-111-13-33

book

FRAME 16 OF 16

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-129-01-49

FRAME 1 OF 6

STRUCTURAL DETAILS

SHT-A	STD DWG 129-01-49	COVER SHEET

INDEX

SHT. NO.	DESCRIPTION	SD MARK
1		SD-1
2	DRAINHOLE & CLEARANCE CUT IN INTC'L MEMBERS IN WAY OF CONT. MEMBER	SD-2
3	CLEARANCE CUT FOR TEE SHAPE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.	SD-3
4		
5		SD-5
6	CLEARANCE CUT & COLLAR PLATES FOR ANGLE SHAPE, BEAMS, STIFF, GIRDERS, & SIDE FRAMES IN WAY OF TIGHT MEMBERS.	SD-6
7	DRAINHOLE & CLEARANCE CUT IN WAY OF BUTT IN SHELL OR DECK BELOW OIL & WATERTANKS.	SD-7
8		
9	CLEARANCE CUT & COLLAR PLATES FOR TEE SHAPE BEAMS, STIFFS, GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEMBERS.	SD-9
10		SD-10
11	CLEARANCE CUT FOR ANGLE SHAPED BEAMS, STIFF, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.	SD-11
12	TYPICAL END DETAIL OF BHD STIFF HAVING NO END ATTACHMENT.	SD-12
13		
14	WELDED OIL OR WATER STOP IN CONTINUOUS MEMBER IN WAY OF INTERSECTION WITH INTC'L TIGHT MEMBERS.	SD-14
15	TYPICAL END DETAIL OF BHD STIFF HAVING CLIP CONNECTION.	SD-15
16		
17		
18		
19		
20	TYPICAL WATERSHED FOR TIGHT & JOINER DOORS.	SD-20
21	LAPPED BEAM CONNECTION AT BHD CORNER.	SD-21
22	LAPPED BEAM CONNECTION AT BHD RADIUS CORNER.	SD-22
23	CLEARANCE CUT & COLLAR PLATE FOR ANGLE SHAPED BEAMS, STIFF, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.	SD-23
24	CLEARANCE CUT & COLLAR PLATE FOR TEE SHAPED BEAMS, STIFF, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.	SD-24
25	WATER OR OIL STOP IN WAY OF TIGHT BHD. UNDER DECK STRAP.	SD-25
26		SD-26
27		
28	DRAINHOLE & CLEARANCE CUT IN INTC'L MEMBERS IN WAY OF CONT. MEMBER.	SD-28

REFERENCES CONTINUED ON SHT. B-1

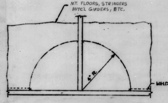
SHT-B	STD DWG 129-01-49	INDEX

GENERAL NOTES

1. DETAILS AS SHOWN ON THIS PLAN ARE TO BE USED ONLY WHERE SPECIFIED ON APPROVED WORKING DRAWINGS.
2. ALL WELDING SHALL BE IN ACCORDANCE WITH ABS RULES.

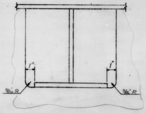
SHT-C	STD DWG 129-01-49	GENERAL NOTES

SHT-1	STD DWG 129-01-49	STANDARD MARK SD-1



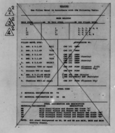
DRAINHOLE & CLEARANCE CUT IN INTC'L MEMBERS IN WAY OF CONT. MEMBER.

SHT-2	STD DWG 129-01-49	STANDARD MARK SD-2



CLEARANCE CUT FOR TEE SHAPED BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.

SHT-3	STD DWG 129-01-49	STANDARD MARK SD-3



WELDING

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING

THIS STEEL → TO THIS STEEL → USE FILLER METAL

FILLER METAL SPEC.

PROCEDURE NO.

STEEL CODE

STEEL DESIGNATION AND DESCRIPTION

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D	
1	11-8-76	SD 43	1. CHANGED DIMENSION FROM 24" TO 3'-0" - DEVELOPMENT	JRK		
		SD34 SD35	2. ADDED "NOTE" FOR WELDED AREA.	DEB		
		SD42	3. INDICATED STIFF. AS NOTED ITEMS 2 & 3 PER ABS LETTER DATED 11-5-76		JLM	USCG 2-28-77 ABS 2-1-77
		SD43	4. ADDED DIM. FOR DRAIN HOLES PER G.G.S. LETTER DTD. 10-13-76		J 11/16	GGS 12-20 76
2		SD44	1. DELETED SIZE OF FILLET WELD PER A.B.S. APPVL. OF 2-1-77			
		1	2 DELETED WELDING DECAL PER A.B.S. LETTER FILE # T-8-2 OF 1-24-77	G.D.		
		SD31	3. ADDED DETAIL SD-31	AP	JLM	ABS 7-6-77
		SD43	4. INDICATED SCALLOP IN I.B. LONGL IN WAY OF W.T. FLOOR AT OPP. END OF TANK FROM ERECTION BUTT.	G.D.	J 3/3	GGS 4-1-77
3	3-22-77	SD33	1. ADDED DET. SD33. 2. WELDING DECAL REINSTATED BSC/GGS MEETING 3-8-77	RHM	JLM J 3/23	USCG 7-28-77 ABS 7-6-77 GGS 4-22-77
4	7-14 77	SD 33	1. ADDED NOTE. REGARDING DEPTH OF CUT OUT IN SIDE FRAMES. PER ABS APPVL OF 7-6-77	GD	JLM	
			2. WELDING DECAL DELETED PER GGS LETTER OF 6-28-77	DEB	[illegible]	

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 212

SCALE NONE
DATE 14 SEPT 1976
DRAWN C/B
INCHARGE D.E.B.
CHECKED D.B.
EXAMINED
REVIEW WJL MEMO DTD 9-20-76
APPROVED R. J[illegible]

PLAN NO. H-4650-129-01-49
ALT. NO. 4 2

STRUCTURAL DETAILS

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	10-13-76				
A.B.S.	11-5-76				
U.S.C.G.	11-22-76				
LLOYD'S R.S.					
U.S.P.H.S.					

REFERENCE PLANS

NO.	PLAN NO.	TITLE

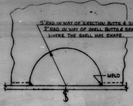
DATE OF ISSUE

	ALTERATION	–	1	2	2	3	3	4
	ENGINEERING DISTRIBUTION	9/15/76	11/18/76	3/7/77	3/4/77	3/22/77	3/21/77	7/20/77
MAIL	OWNERS	4	4	4		4		2
MAIL	AMERICAN BUREAU	3	3	3		3		
MAIL	LLOYD'S R.S.							
MAIL	U.S.M.A.							
MAIL	U.S. NAVY							
MAIL	U.S.C.G.	2	2	2		2		
MAIL	JOINER CONT'R.							
INSPECTION	OWNER'S INSP.		1		1	1		1
INSPECTION	AM. BU. INSP.		1		1	1	1	1
INSPECTION	LLOYD'S INSP.							
INSPECTION	U.S.M.A. INSP.		1		1	1		1
INSPECTION	U.S. NAVY INSP.							
INSPECTION	U.S.C.G. INSP.		1		1		1	1
INSPECTION	CDSCHAUB		1		1		1	1
OFFICE	HULL DRAFT. - 21	18	1		1		1	1
OFFICE	MACH. DRAFT. - 22	18	1		2		2	2
OFFICE	ELEC. DRAFT. - 23	18	1		1		1	1
OFFICE	OUTFIT. DRAFT. - 25							
OFFICE	ESTIMATING							
OFFICE	WJLANE	28	1		1		1	1
MISC.	PRODUCTION (BCD)							
MISC.	ORDER DEPT.							
MISC.	JOINER CONT. YARD							
MISC.	A MILLER			1		1		1
	TOTAL ENG'R. DIST.	14	18	10	10	12	8	13
	YARD DISTRIBUTION	9/15/76	11/17/76	3/7/77	3/24/77	7/22/77		
YARD	GEO. EASTERS		2	2	2	1		
YARD	P. McNAIR	28	1	1	1	1		
YARD	PIECE RATE - 11	18	1	1	1	1		
YARD	TEST DEPARTMENT							
YARD	A. DALBY		1	1	1	1		
YARD	PLANNING	18	1	1	1	1		
STRUCTURAL	GROUND ASSEMBLY		2	2	2	2		
STRUCTURAL	35 DEPT.		2	2	2	2		
STRUCTURAL	HANS BUSCHNER		1	1	1	1		
STRUCTURAL	B. BENZING		1	1	1	1		
STRUCTURAL	NO. WAY							
STRUCTURAL	NO. WAY							
STRUCTURAL	NO. WAY							
STRUCTURAL	NO. WAY							
STRUCTURAL	STRUCT. SUPER.		2	2	2	2		
STRUCTURAL	OPTICAL DETAIL - 40	28	2	2	2	2		
STRUCTURAL	WET DOCK							
MACH'Y & OUTFIT.	PIPE SHOP - 52							
MACH'Y & OUTFIT.	OUTFIT. #1 PIER		1	1	1	1		
MACH'Y & OUTFIT.	PIPE DRAFT. - 52		2	2	2	2		
MACH'Y & OUTFIT.	BOILER SHOP - 58		1	1	1	1		
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60		1	2	2	2		
MACH'Y & OUTFIT.	Q-MAT'L		1	1	1	1		
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70							
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74							
MACH'Y & OUTFIT.	COPPER SHOP - 51							
MACH'Y & OUTFIT.	PAINT SHOP - 78		1	1	1	1		
OTHER	WELDING							
OTHER	BRUCE THOMAS		1	1	1	–		
OTHER	MOLD LOFT - 41		1	1	1	1		
OTHER	BRACKET SHOP							
OTHER	H. LEVY			1	1	1		
OTHER	QUALITY ASSURANCE			1	1	1		
	TOTAL YARD DIST.	6	23	26	28	26		

4650-51 - REV. 1
4650-51 - REV. 2
4650-51 - ALT 3
4650-51 - ALT 4

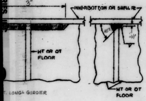
H-110

13.25 SQ. FT.

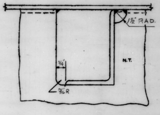

3" RAD. IN WAY OF ERECTION BUTTS & SEAMS
2" RAD IN WAY OF SHELL BUTTS & SEAMS
WHERE THE SHELL HAS SHAPE.
WELD

TYPICAL CUTOUT IN WAY OF SHELL BUTTS & SEAMS

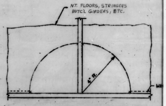
STD DWG 129-01-49 | STANDARD MARK SD-13 | SHT-10 | STD DWG 129-01-49 | STANDARD MARK SD-10 | SHT-7 | STD DWG 129-01-49 | STANDARD MARK SD-7 | SHT-4 | STD DWG 129-01-49 | STANDARD MARK SD-4 | SHT-1 | STD DWG 129-01-49 | STANDARD MARK


3"
INNERBOTTOM OR SHELL PL
45°
3/16
WT OR OT
FLOOR
T. LONG'L GIRDER
WT OR OT
FLOOR

L OR WATERSTOP IN CONTINUOUS MEMBER IN
TERSECTION WITH INTC'L TIGHT MEMBER.

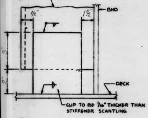

1½" RAD.
N.T.
3/4"
9/16"R

CLEARANCE CUT FOR ANGLE SHAPE BEAMS, STIFFENERS, GIRDERS, & SIDE FRAMES IN WAY OF N.T. MEMBERS.

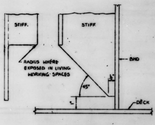

N.T. FLOORS, STRINGERS
INTC'L GIRDERS, ETC.
4" R.
WE

DRAINHOLE & CLEARANCE CUT IN INTC'L MEMBERS IN WAY OF CONT. MEMBER.

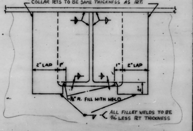
STD DWG 129-01-49 | STANDARD MARK SD-14 | SHT-11 | STD DWG 129-01-49 | STANDARD MARK SD-11 | SHT-8 | STD DWG 129-01-49 | STANDARD MARK SD-8 | SHT-5 | STD DWG 129-01-49 | STANDARD MARK SD-5 | SHT-2 | STD DWG 129-01-49 | STANDARD MARK


STIFF
1/2"
1½"
BHD
3"
2"
DECK
CLIP TO BE 1/16" THICKER THAN
STIFFENER SCANTLING

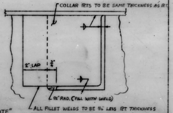
CAL END DETAIL OF BHD STIFFENERS
VING CLIP CONNECTIONS


STIFF.
STIFF
BHD
RADIUS WHERE
EXPOSED IN LIVING
WORKING SPACES
45°
1/2"
DECK

TYPICAL END DETAIL OF BHD STIFF
HAVING NO END ATTACHMENT

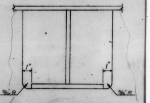

COLLAR PLTS TO BE SAME THICKNESS AS PLT.
2" LAP
1"
1"
2" LAP
2"
1/2" R. FILL WITH WELD
ALL FILLET WELDS TO BE
1/16 LESS PLT THICKNESS

CLEARANCE CUT & COLLAR PLATES FOR TEE SHAPE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEMBERS.


COLLAR PLTS TO BE SAME THICKNESS AS PLT.
2" LAP
3/4"
1/2" RAD. (FILL WITH WELD)
ALL FILLET WELDS TO BE 1/16 LESS PLT THICKNESS

"NOTE"
THIS DETAIL APPLICABLE AT DECK IN WAY OF SHELL FRAME WHERE NECESSARY.

CLEARANCE CUT & COLLAR PLTS FOR ANGLE SHAPE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEMBERS.


1"
1"
9/16 R
9/16" R

CLEARANCE CUT FOR TEE SHAPED BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.

STD DWG 129-01-49 | STANDARD MARK SD-15 | SHT-12 | STD DWG 129-01-49 | STANDARD MARK SD-12 | SHT-9 | STD DWG 129-01-49 | STANDARD MARK SD-9 | SHT-6 | STD DWG 129-01-49 | STANDARD MARK SD-6 | SHT-3 | STD DWG 129-01-49 | STANDARD MARK

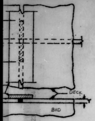
AUTOMATION INDUSTRIES INC

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

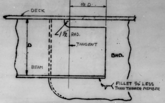
Sep 1980 8X

BUILDERS PLAN NO. H-4650-129-01-49

FRAME 2 OF 6

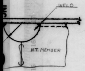


IN WAY OF TIGHT BHDS

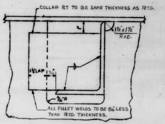

DECK
½ D
1½ RAD.
TANGENT
D
BEAM
BHD.
FILLET 1/16 LESS THAN THINNER MEMBER

LAPPED BEAM CONNECTION AT BHD RADIUS CORNER.

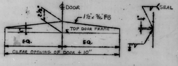
5-01-49 STANDARD MARK SD-25 | SHT-22 STD DWG 129-01-49 STANDARD MARK SD-22 | SHT-19 STD DWG 129-01-49 STANDARD MARK SD-19 | SHT-16 STD DWG 129-01-49 STANDARD MARK SD-16 | SHT-13 STD DWG 129-01-49 STANDARD MARK SD-13 | SH


WELD
N.T. MEMBER

AT BUTT WELDED BEAMS,
S, STIFFENERS, ETC.

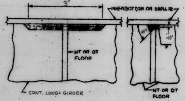

COLLAR PLT TO BE SAME THICKNESS AS PLT.G.
L
1½"x1½" RAD.
1½ LAP
¾
9/16"R
ALL FILLET WELDS TO BE 1/16 LESS THAN PLT.G. THICKNESS.

CLEARANCE CUT & COLLAR PLT FOR ANGLE SHAPE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.


℄ DOOR
2½"
1½" x 3/16" FB
TOP DOOR FRAME
EQ.
EQ.
CLEAR OPENING OF DOOR + 10"
SEAL

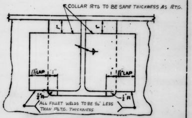
"NOTE"
WATERSHEDS TO BE INSTALLED ONLY WHERE NECESSARY DUE TO EXPOSED LOCATION OF DOOR.

TYPICAL WATERSHED FOR TIGHT & JOINER DOORS.

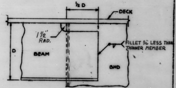

3"
INNERBOTTOM OR SHELL PL
WT OR OT FLOOR
CONT. LONGL GIRDER
45°
3/16
WT OR OT FLOOR

WELDED OIL OR WATERSTOP IN CONTINUOUS MEMBER IN WAY OF INTERSECTION WITH INTCL TIGHT MEMBER.

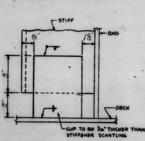
9-01-49 STANDARD MARK SD-26 | SHT-23 STD DWG 129-01-49 STANDARD MARK SD-23 | SHT-20 STD DWG 129-01-49 STANDARD MARK SD-20 | SHT-17 STD DWG 129-01-49 STANDARD MARK SD-17 | SHT-14 STD DWG 129-01-49 STANDARD MARK SD-14 | SH


COLLAR PLTS TO BE SAME THICKNESS AS PLT.G.
L
L
1½ LAP
1½ LAP
½"R
½"R
ALL FILLET WELDS TO BE 1/16" LESS THAN PLT.G. THICKNESS

CLEARANCE CUT & COLLAR PLT FOR TEE SHAPED BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.


½ D
DECK
1½" RAD.
D
BEAM
FILLET 1/16 LESS THAN THINNER MEMBER
BHD

LAPPED BEAM CONNECTION AT BHD CORNER


STIFF
½"
1½"
BHD
3"
2"
DECK
CLIP TO BE 1/16" THICKER THAN STIFFENER SCANTLING

TYPICAL END DETAIL OF BHD STIFFENERS HAVING CLIP CONNECTIONS

01-49 STANDARD MARK SD-27 | SHT-24 STD DWG 129-01-49 STANDARD MARK SD-24 | SHT-21 STD DWG 129-01-49 STANDARD MARK SD-21 | SHT-18 STD DWG 129-01-49 STANDARD MARK SD-18 | SHT-15 STD DWG 129-01-49 STANDARD MARK SD-15 | SH

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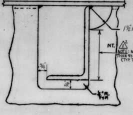
...ICKNESS

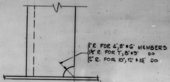
THICKNESS

...AMS, STIFFS,
...PS.



1½" RAD.
NT.
⚠1²
NOTE: NOT TO BE LESS THAN 2/3 DEPTH OF MEMBER (TYP. THROUGH-OUT)
3/4"
3/4"
¼" R. TYP.

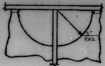
CLEARANCE CUT FOR ANGLE SHAPED BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBER.



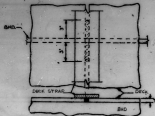
1" R FOR 4", 5" & 6" MEMBERS
1½" R. FOR 7", 8" & 9" DO
2" R. FOR 10", 12" & 15" DO

TYP. DRAINAGE CUTS
IN WAY OF STIFFENERS

⚠2³

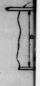


DRAIN HOLE & CLEARANCE CUT IN INTC'L MEMBERS IN WAY OF CONT. MEMBERS.



BHD.
3"
3"
DECK STRAP
DECK
T
BHD

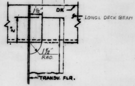
WATER OR OIL STOP IN WAY OF TIGHT BHDS UNDER DK STRAP.



LAPPED BEA...

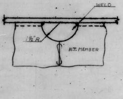
MARK SD-37 | SHT 34 | STD DWG 129-01-49 | STANDARD MARK SD-34 | SHT-31 | STD DWG 129-01-49 | STANDARD MARK SD-31 | SHT-28 | STD DWG 129-01-49 | STANDARD MARK SD-28 | SHT-25 | STD DWG 129-01-49 | STANDARD MARK SD-25 | SHT-22 | STD

⚠1² NOTE: NOT TO BE LESS THAN 2/3 DEPTH OF MEMBER (TYP. THROUGH-OUT)



1½"
DK
LONGL DECK BEAM
2"
1½" RAD.
TRANSV. FLR.

LAPPED CONNECTION AT DECK BEAMS

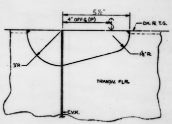


WELD
1½" R.
N.T. MEMBER

TYPICAL CUTOUT AT BUTT WELDED BEAMS, GIRDERS, SIDE FRAMES, STIFFENERS, ETC.

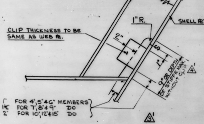
CLEARANCE CUT...
STIFFENERS, GIRDE...

MARK SD-38 | SHT-35 | STD DWG 129-01-49 | STANDARD MARK SD-35 | SHT-32 | STD DWG 129-01-49 | STANDARD MARK SD-32 | SHT-29 | STD DWG 129-01-49 | STANDARD MARK SD-29 | SHT-26 | STD DWG 129-01-49 | STANDARD MARK SD-26 | SHT-23 | STD



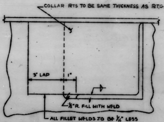
5½"
4" OFF ℄ (P)
DK. PL. T.G.
3"R
1½"R.
TRANSV. FLR.
C.V.K.

CLEARANCE CUT IN MEMBERS IN WAY OF MEMBER & DECK PLATE BUTT.



1"R.
SHELL PLTG.
CLIP THICKNESS TO BE SAME AS WEB PL.
2"
1"
9" OR DEPTH OF STIFFR. MAX. WITHOUT CLIP
⚠4¹
1" FOR 4", 5" & 6" MEMBERS
1½" FOR 7", 8" & 9" DO
2" FOR 10", 12" & 15" DO
⚠3¹

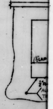
TYP. CUTOUT & CLIP AT SIDE FRAMES



COLLAR PLTS TO BE SAME THICKNESS AS PLTG.
3" LAP
1"
½" R. FILL WITH WELD
ALL FILLET WELDS TO BE 1/16" LESS THAN PLATE THICKNESS.

"NOTE"
THIS DETAIL APPLICABLE AT DECK IN WAY OF SHELL FRAME WHERE NECESSARY MARKED FOR WEBS.

CLEARANCE CUT & COLLAR PLTS FOR ANGLE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEMBERS.



CLEARANCE CU...
STIFFENERS, G...

MARK SD-39 | SHT-36 | STD DWG 129-01-49 | STANDARD MARK SD-36 | SHT-33 | STD DWG 129-01-49 | STANDARD MARK SD-33 | SHT-30 | STD DWG 129-01-49 | STANDARD MARK SD-30 | SHT 27 | STD DWG 129-01-49 | STANDARD MARK SD-27 | SHT-24 | STD

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FRAME 4 OF 6

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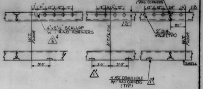
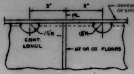

7"
11"
12"
12"
12"
12"
6"
6"
12"
12"
12"
24"
6"
I.B.
1½" x 4" CUT
1" RAD. CORNERS
4"x2½" SCALLOP
W 1" RAD. CORNERS
2
4
W.T. FLOOR
N.T. FLOOR
1½"
20"
2" DIA. HOLE (TYP.)
3'0"
3'0"
3'0"
1
4"x1½" DRAIN HOLE
W/1" RAD. CORNERS
(TYP.)
SHELL

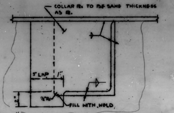
AIR VENT & DRAINAGE HOLES IN I.B. LONG'LS

SHT-43 | STD DWG 129-01-49 | STANDARD MARK SD-43


3"
3"
INNERBOTTOM OR SHELL PLT.G
M.L.
1½"R
1½"R.
CONT. LONG'L
W.T. OR O.T. FLOORS

WELDED OIL OR WATER STOP IN CONT. MEMBER IN WAY OF INTERSECTION WITH INTC'L TIGHT MEMBER.

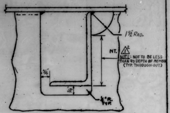
SHT-41 | STD DWG 129-01-49 | STANDARD MARK SD-41


COLLAR PL. TO BE SAME THICKNESS AS PL.
5" LAP
1"
2"
½"R
FILL WITH WELD

"NOTE"
ALL FILLET WELDS TO BE 1/16 LESS THAN PLT.G THICKNESS

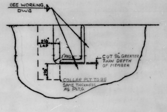
CLEARANCE CUT & COLLAR PLT FOR ANGLE SHAPED BEAMS, STIFFS, GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEMBERS.

SHT-37 | STD DWG 129-01-49 | STANDARD MARK SD-37


1½" RAD.
N.T.
1 2
NOTE: NOT TO BE LESS THAN 2/3 DEPTH OF MEMBER (TYP. THROUGH-OUT)
¾"
¾"
½"R. TYP.

CLEARANCE CUT FOR ANGLE SHAPED BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBER

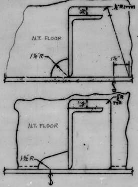
SHT 34 | STD DWG 129-01-49 | STANDARD MARK SD-34


SEE WORKING DWG
2½" LAP
1"
1" RAD.
2½"
CUT 1/16" GREATER THAN DEPTH OF MEMBER
COLLAR PLT TO BE SAME THICKNESS AS PLT.G

W.T. COLLAR CONTINUOUS FRAMING MEMBERS THRU TIGHT STRUCTURE.

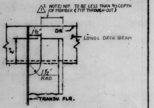
SHT-44 | STD DWG 129-01-49 | STANDARD MARK SD-44

SHT-40 | STD DWG 129-01-49 | STANDARD MARK SD-40


½"R. (TYP.)
¾"
N.T. FLOOR
1½"R
1½"
½"R TYP.
¾"
N.T. FLOOR
1½"R

DRAIN & CLEARANCE CUT IN WAY OF BUTT IN SHELL OR DECK - IN OIL & WATER TANKS.

SHT-38 | STD DWG 129-01-49 | STANDARD MARK SD-38


1 2
NOTE: NOT TO BE LESS THAN 2/3 DEPTH OF MEMBER (TYP. THROUGH-OUT)
1½"
DK
LONG'L DECK BEAM
2"
1½" RAD.
TRANSV. FLR.

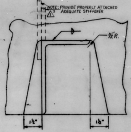
LAPPED CONNECTION AT DECK BEAMS

SHT-35 | STD DWG 129-01-49 | STANDARD MARK SD-35

INDEX

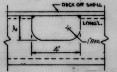
SHT NO.	DESCRIPTION	SD MARK
29		SD29
30	CLEARANCE CUT & COLLAR PLTS FOR ANGLE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEMBERS.	SD30
31	TYPICAL DRAINAGE CUTS IN WAY OF STIFFENERS	SD31
32		SD32
33	TYP. CUT OUT & CLIP AT SIDE FRAMES	SD33
34	CLEARANCE CUT FOR ANGLE SHAPE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF N.T. MEMBERS.	SD34
35	LAPPED CONNECTION DECK BEAMS.	SD35
36	CLEARANCE CUT IN MEMBERS IN WAY OF MEMBER & DECK PLATE BUTT.	SD36
37	CLEARANCE CUT & COLLAR PLATES FOR ANGLE SHAPE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEMBERS.	SD37
38	DRAIN & CLEARANCE CUT IN WAY OF BUTT IN SHELL OR DECK - IN OIL & WATER TANKS.	SD38
39	DRAIN HOLE IN SHELL OR DECK LONG'L IN OIL & WATER TANKS.	SD39
40		SD40
41	WELDED OIL OR WATER STOP IN CONTINUOUS MEMBER IN WAY OF INTERSECTION WITH INTC'L TIGHT MEMBER.	SD41
42	TYPICAL LONG'L THROUGH N.T. FLOOR OR BHD.	SD42
43	AIR VENT & DRAINAGE HOLES IN I.B. LONG'LS.	SD43
44	W.T. COLLAR CONTINUOUS FRAMING MEMBERS THRU TIGHT STRUCTURE.	SD44

SHT B-1 | STD DWG 129-01-49 | COVER SHEET


NOTE: PROVIDE PROPERLY ATTACHED ADEQUATE STIFFENER
3
½"R.
1½"
1½"

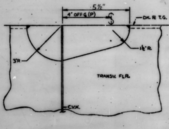
TYPICAL LONG'L THROUGH N.T. FLOOR OR BHD

SHT-42 | STD DWG 129-01-49 | STANDARD MARK SD-42


DECK OR SHELL
LONG'L.
2"
1" RAD.
4"

DRAIN HOLE IN SHELL OR DECK LONG'L IN OIL & WATER TANK.

SHT-39 | STD DWG 129-01-49 | STANDARD MARK SD-39


5½"
4" OFF ℄ (P)
DK. PL. T.G.
1½"R.
3"R
TRANSV. FLR.
C.V.K.

CLEARANCE CUT IN MEMBERS IN WAY OF MEMBER & DECK PLATE BUTT.

SHT-36 | STD DWG 129-01-49 | STANDARD MARK SD-36

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-129-01-49

FRAME 5 OF 6

49957 (Rev.A 11-75) WELDING 11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING		
THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C–25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K		CWE 301 SAW (Single)
(Lincoln 860–0 Flux)		CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M	CWE 108 SMAW (Fillet Welds 9018M)
	11018M	(Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

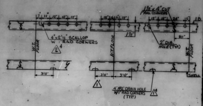
I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A–514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

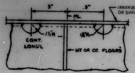
NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3


1½" x 4" CUT
1" RAD. CORNERS
7" 11" 12" 12" 12"
12" 6 6" 12"
12" 12" 24" 6"
I.B.
4" x 2½" SCALLOP
W 1" RAD CORNERS
2
1½"
2" DIA.
HOLE (TYP.)
30"
W.T. FLOOR
N.T. FLOOR
W.T. FLOOR
3'-0"
3'-0"
3'-0"
SHELL
1
4" X 1½" DRAIN HOLE
W/1" RAD. CORNERS
(TYP.)
1

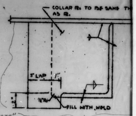
AIR VENT & DRAINAGE HOLES IN I.B. LONG'LS

SHT-43 | STD DWG 129-01-49 | STANDARD MARK SD-43


3"
3"
INNERBOTTOM
OR SHELL PLT.G
ML
1½" R
1½" R
CONT.
LONG'L
W.T. OR O.T. FLOORS

WELDED OIL OR WATER STOP IN CONT. MEMBER IN WAY OF INTERSECTION WITH INTC'L TIGHT MEMBER.

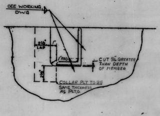
SHT-41 | STD DWG 129-01-49 | STANDARD MARK SD-41


COLLAR PL. TO BE SAME TH
AS PL.
3" LAP
1"
2"
½" R
FILL WITH WELD

"NOTE"
ALL FILLET WELDS TO BE 1/16 LESS THAN PL

CLEARANCE CUT & COLLAR PLT FOR ANGLE SHAPED
GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEM

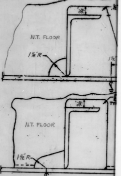
SHT-37 | STD DWG 129-01-49 | STANDARD


SEE WORKING
DWG
2½" LAP
1"
1" RAD
2½"
CUT 1/16" GREATER
THAN DEPTH
OF MEMBER
COLLAR PLT TO BE
SAME THICKNESS
AS PLT.G

W.T. COLLAR CONTINUOUS FRAMING MEMBERS THRU TIGHT STRUCTURE.

SHT-44 | STD DWG 129-01-43 | STANDARD MARK SD-44

SHT-40 | STD DWG 129-01-49 | STANDARD MARK SD-40


½"
¾"
N.T. FLOOR
1½" R
1½"
¾"
TY
N.T. FLOOR
1½" R

DRAIN & CLEARANCE CUT IN WAY OF BUTT IN SHELL
DECK - IN OIL & WATER TANKS.

SHT-38 | STD DWG 129-01-49 | STANDARD

INDEX

SHT NO.	DESCRIPTION	S.D. MARK
29		SD29
30	CLEARANCE CUT & COLLAR PLTS FOR ANGLE BEAMS, STIFFENERS, GIRDERS & SIDE FRAMES IN WAY OF TIGHT MEMBERS.	SD30
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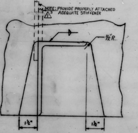
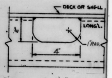
SHT. B-1 | STD DWG 129-01-49 | COVER SHEET


NOTE: PROVIDE PROPERLY ATTACHED
ADEQUATE STIFFENER
1
½" R.
1½"
1½"

TYPICAL LONG'L THROUGH N.T. FLOOR OR BHD

SHT-42 | STD DWG 129-01-49 | STANDARD MARK SD-42


DECK OR SHELL
LONG'L.
2"
1" RAD.
4"

DRAIN HOLE IN SHELL OR DECK LONG'L IN
& WATER TANK.

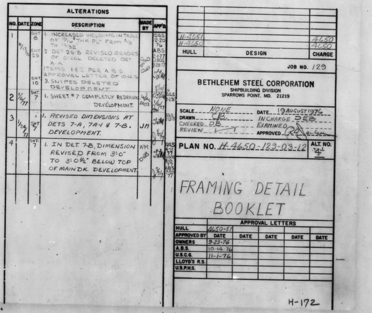
SHT-39 | STD DWG 129-01-49 | STANDARD

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-129-01-49

FRAME 6 OF 6



ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	11/17/76	SHT 8 SHT 25 SHT 10	1. INCREASED WELDING IN TABLE OF 11/16" THK PLT FROM 3/8 TO 13/32" 2 DET 25-B REVISED GRADES OF STEEL DELETED DET A-A ITEMS 1&2 PER A B S APPROVAL LETTER OF 10-14-76 3. SNIPES DELETED DEVELOPMENT	GJD DEB DPD	GGS 12-20 76 ABS 2-1-77 USCG 2-28-77
2	1/6/77	SHT 7	1. SHEET # 7 COMPLETLY REDRAWN. DEVELOPMENT.	DL-13	1/6/77 GGS 2-23-77
3	1/24/77	SHT 7	1. REVISED DIMENSIONS AT DETS 7-A, 7A-1 & 7-B. DEVELOPMENT.	JM	1/25/77 GGS 2-23-77
4		SHT. 7	1. IN DET. 7-B, DIMENSION REVISED FROM 3'-0" TO 3'-0½" BELOW TOP OF MAIN DK. DEVELOPMENT.	WM DEB	3/31/77 GGS 4-11 77 USCG 5-10 77 ABS 7-20 77

HULL	DESIGN	CHARGE
H-4651		4650
H-4650		4650

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

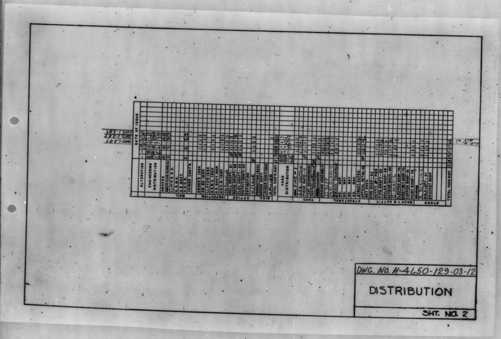
SCALE NONE
DATE 19 AUGUST 1976
DRAWN C.B.
INCHARGE DEB
CHECKED DB
EXAMINED
REVIEW
APPROVED R. Jackson

PLAN NO. H-4650-129-03-12
ALT. NO. 4

FRAMING DETAIL
BOOKLET

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	9-23-76				
A.B.S.	10-14-76				
U.S.C.G.	11-1-76				
LLOYD'S R.S.					
U.S.P.H.S.					

H-172



DATE OF ISSUE
SHTS 1-287
SHTS 1-287
SHTS 1-287

ALTERATION
ENGINEERING DISTRIBUTION
MAIL: OWNERS, AMERICAN BUREAU, LLOYD'S R.S., U.S.M.A., U.S NAVY, U.S.C.G., JOINER CONT'R.
INSPECTION: OWNER'S INSP., AM. BU. INSP., LLOYD'S INSP., U.S.M.A. INSP., U.S. NAVY INSP., U.S.C.G. INSP., CD SCHAUB
OFFICE: HULL DRAFT. - 21, MACH. DRAFT. - 22, ELEC. DRAFT. - 23, OUTFIT. DRAFT. - 25, ESTIMATING, W.J. LANE
MISC.: PRODUCTION (BCD), ORDER DEPT., JOINER CONT. YARD, A. MILLER
TOTAL ENG'R. DIST.
YARD DISTRIBUTION
YARD: PIER #1, LEO LASTRUP, PIECE RATE - 11, TEST DEPARTMENT, PLANNING
STRUCTURAL: GROUND ASSEMBLY, 35 DEPT, HANS KUSCH, BRUCE, NO. WAY, NO. WAY, NO. WAY, NO. WAY, STRUCT. SUPER., OPTICAL DETAIL - 45, WET DOCK
MACH'Y & OUTFIT.: PIPE SHOP - 52, OUTFIT. #1 PIER, PIPE DRAFT. - 52, BOILER SHOP - 58, OUTSIDE MACH. - 60, Q-MAT'L, ELECTRIC SHOP - 70, SHEET MET. SHOP - 74, COPPER SHOP - 81, PAINT SHOP - 78
OTHER: WELDING, B. BENZING, MOLD LOFT - 41, BRACKET SHOP
TOTAL YARD DIST.

DWG. NO. H-4650-129-03-12

DISTRIBUTION

SHT. NO. 2

6X Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE, SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-129-03-12

book FRAME 1 OF 16

REV	SHT. NO	TITLE
	1	TITLE
	2	DISTRIBUTION
	3	INDEX
	4&4A	ALTERATIONS
	5	REFERENCES
	6	GENERAL NOTES
	7	DETAILS
	8	↓
	9	
	10	
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	27	
	28	
	29	

DWG. NO. H-4650-129-03-12

INDEX

SHT NO 3

REV	SHT	DESCRIPTION	DATE	APPD	OWNER DATE	OWNER APPD	REV	SHT	DESCRIPTION	DATE	APPD	OWNER DATE	OWNER APPD

DWG. NO. H-4650-129-03-12

ALTERATIONS

SHT. NO. 4

6X

Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-129-03-12

book

FRAME 2 OF 16

					OWNER							OWNER	
REV	ZONE	DESCRIPTION	DATE	APPD	DATE	APPD	REV	ZONE	DESCRIPTIONS	DATE	APPD	DATE	APPD

DWG. NO. H-4650-129-03-12

ALTERATIONS

SHT. NO. 4-A

REFERENCES

NO.	TITLE	DWG. NO.
1	WELDING DETS. BOOKLET	H-4650-129-01-50
2		

DWG. NO. H-4650-129-03-12

REFERENCES

SHT. NO. 5

6X Sep 1980

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-129-03-12

book FRAME 3 OF 16

6X **Sep 1980**

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

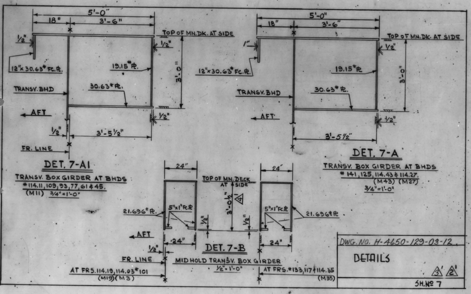
BUILDERS PLAN NO. H-4650-129-03-12

book FRAME 4 OF 16

GENERAL NOTES

1. ALL WELDING TO BE IN ACCORDANCE WITH ABS & REF. "I
2. ALL MATERIAL SIZES & GRADES SHALL BE VERIFIED FROM PARENT PLANS BEFORE ACTUAL FABRICATION.
3. DETAILS AS SHOWN ON THIS PLAN ARE TO BE USED ONLY WHERE SPECIFIED ON APPROVED WORKING DRAWINGS.
4. ALL DOUBLE FILLET WELDS TO BE 1/16" GREATER THAN THINNER PLATE DIVIDED BY 2 UNLESS OTHERWISE NOTED.

DWG. NO. H-4650-129-03-12
GENERAL NOTES
SHT. NO. 6


5'-0"
18"
3'-6"
1/2"
TOP OF MN. DK. AT SIDE
1/2"
12"x30.63# FC. PL.
19.15# PL.
3'-0"
TRANSV. BHD
30.63# PL.
AFT
1/2"
1/2"
3'-5 1/2"
FR. LINE
DET. 7-A1
TRANSV. BOX GIRDER AT BHDS
#114.11, 109, 93, 77, 61 & 45.
(M11) 3/4"=1'-0"
1"
12"x30.63# FC. PL.
TRANSV. BHD
AFT
3'-5 1/2"
DET. 7-A
TRANSV. BOX GIRDER AT BHDS
#141, 125, 114.43 & 114.27.
(M43) (M27)
3/4"=1'-0"
24"
TOP OF MN. DECK AT SIDE
3'-0 1/2"
4
5"x1" FC. PL.
21.696# PL.
1/2"
24"
FR. LINE
AT FRS. 114.19, 114.03 #101
(M19) (M3)
DET. 7-B
MID HOLD TRANSV. BOX GIRDER
1/2"=1'-0"
AT FRS. #133, 117 & 114.35
(M35)
DWG. NO. H-4650-129-03-12
DETAILS
3
2
SH. NO 7

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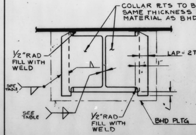
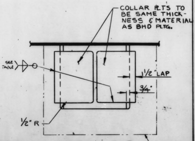
BUILDERS PLAN NO. H-4650-129-03-12

book FRAME 5 OF 16


COLLAR PLTS TO BE SAME THICKNESS & MATERIAL AS BHD PLTG.
1/2" RAD FILL WITH WELD
LAP = 2T+1"
1"
SEE TABLE
SEE TABLE
1/2" RAD FILL WITH WELD
BHD PLTG

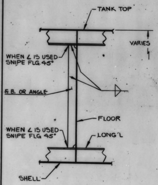

COLLAR PLTS TO BE SAME THICKNESS & MATERIAL AS BHD PLTG.
SEE TABLE
1 1/2" LAP
3/4"
1/2" R
BHD PLTG

THINNER PL THK.	WELD SIZE
3/16"	3/16"
1/4"	3/16"
3/8"	5/16"
1/2"	5/16"
5/8"	3/8"
11/16"	13/32" △1
3/4"	7/16"
7/8"	1/2"
1"	9/16"

DETAIL 8-A
SCALE: 1 1/2" = 1'-0"
COLLAR IN WAY OF TIGHT MEMBERS

DETAIL 8-B
SCALE: 1 1/2" = 1'-0"
N. T. COLLAR

DWG. NO. H-4650-129-03-12
DETAILS
DWG NO. 8


TANK TOP
VARIES
WHEN ∠ IS USED SNIPE FLG 45°
F.B. OR ANGLE
FLOOR
WHEN ∠ IS USED SNIPE FLG 45°
LONG'L
SHELL

DETAIL 9-A
SCALE 3/4" = 1'-0"

TYPICAL INNERBOTTOM FLOOR STIFFENERS

DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 9

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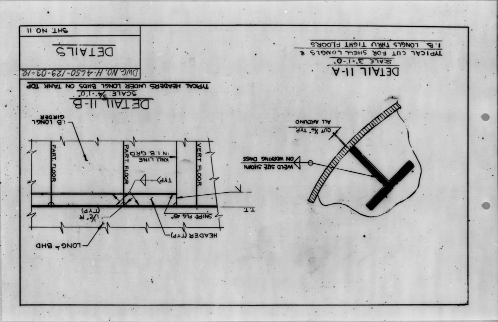
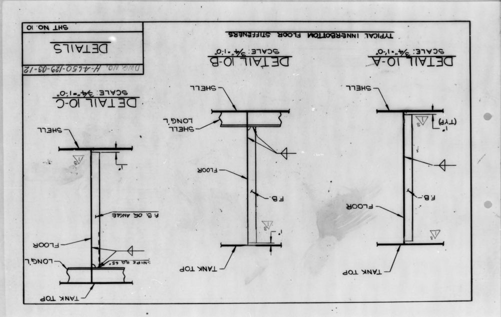
FRAME 6 OF 16


WELD SIZE SHOWN ON WORKING DWGS
CUT 1/16" TYP. ALL AROUND
LONG'L BHD
1/2" R (TYP)
I.B. LONGL GIRDER
PART FLOOR
PART FLOOR
KNU LINE IN I.B. GRD
TYP
HEADER (TYP)
SNIPE FLG 45°
VERT FLOOR
T.T.

DETAIL 11-A
SCALE 3"=1'-0"
TYPICAL CUT FOR SHELL LONGLS & I.B. LONGLS THRU TIGHT FLOORS

DETAIL 11-B
SCALE: 3/4"=1'-0"
TYPICAL HEADERS UNDER LONGL BHDS ON TANK TOP

DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 11


TANK TOP
FLOOR
SHELL
F.B.
1" (TYP)
TANK TOP
FLOOR
SHELL LONG'L
SHELL
F.B.
1"
TANK TOP
LONG'L
FLOOR
SNIPE FLG 45°
F.B. OR ANGLE
SHELL
1"

DETAIL 10-A
SCALE: 3/4"=1'-0"

DETAIL 10-B
SCALE: 3/4"=1'-0"

TYPICAL INNERBOTTOM FLOOR STIFFENERS

DETAIL 10-C
SCALE: 3/4"=1'-0"

DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 10

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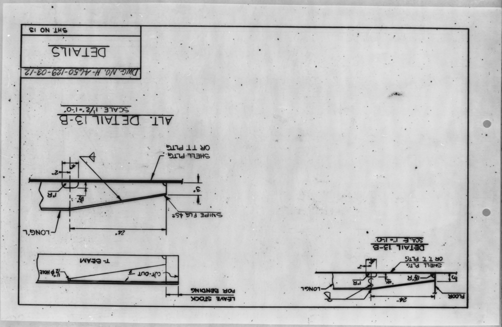
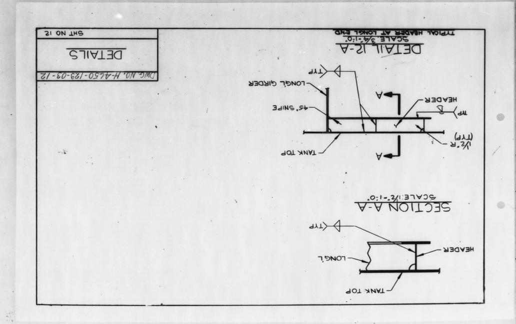
FRAME 7 OF 16


DWG. NO. H-4650-129-03-12
DETAILS
SHT NO 13
ALT. DETAIL 13-B
SCALE: 1 1/2"=1'-0"
LONG'L
1"R
2"
1/2"
24"
3"
SNIPE FLG 45°
SHELL PLTG. OR TT PLTG
T-BEAM
1 1/4" Ø HOLE
CUT-OUT
LEAVE STOCK FOR BENDING
DETAIL 13-B
SCALE: 1"=1'-0"
LONG'L
1"R
1 1/2"R
24"
SHELL PLTG OR T.T. PLTG
FLOOR


DWG. NO. H-4650-129-03-12
DETAILS
SHT NO 12
DETAIL 12-A
SCALE: 3/4"=1'-0"
TYPICAL HEADER AT LONG'L END
TYP
LONG'L GIRDER
45° SNIPE
TANK TOP
A
A
HEADER
TYP
1/2"R (TYP)
SECTION A-A
SCALE: 1 1/2"=1'-0"
TYP
LONG'L
HEADER
TANK TOP

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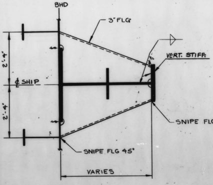
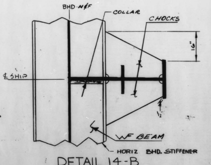

BHD
3" FLG
VERT. STIFF.
℄ SHIP
2'-4"
2'-4"
SNIPE FLG. 45°
SNIPE FLG 45°
VARIES

DETAIL 14-A
SCALE 3/4"=1'-0"

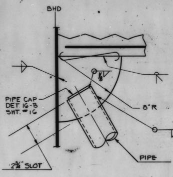
BRKT FOR VERT. BHD STIFF @ ℄ SHIP


BHD N/F
COLLAR
CHOCKS
16"
℄ SHIP
WF BEAM
HORIZ BHD. STIFFENER

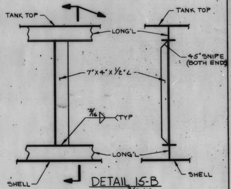
DETAIL 14-B
FOR DETAILS NOT SHOWN
SEE DETAIL 14-A
SCALE: 3/4"=1'-0"

BRKT FOR VERT TO HORIZ.
STIFF @ ℄ SHIP

DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 14


BHD
PIPE CAP
DET 16-B
SHT. #16
1/8
8" R
PIPE
2 3/4" SLOT

DETAIL 15-A
SCALE: 3"=1'-0"


TANK TOP
LONG'L
TANK TOP
45° SNIPE
(BOTH ENDS)
7"X4"X1/2" L
5/16
TYP
LONG'L
SHELL
SHELL

DETAIL 15-B
SCALE: 3/4"=1'-0"

DWG. NO. H-4650-129-03-12
DETAILS
SHT NO 15

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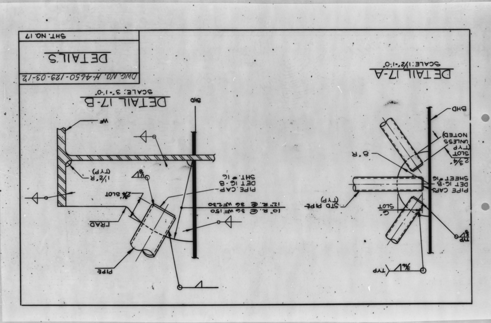
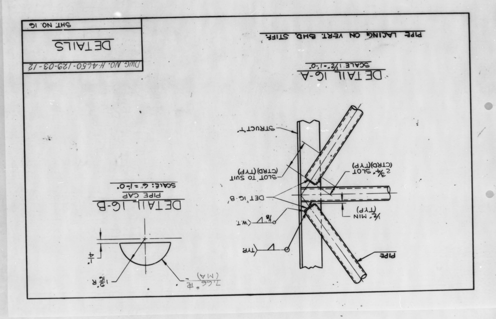
book

FRAME 9 OF 16


DETAIL 17-B
SCALE: 3"=1'-0"
PIPE
1"RAD.
2¾" SLOT
1½"R (TYP)
WF
BHD
PIPE CAP DET 16-B SHT. #16
10"R. @ 36 WF150
12"R. @ 36 WF230
DETAIL 17-A
SCALE: 1½"=1'-0"
STD PIPE (TYP)
8"R
6" SLOT
PIPE CAPS DET 16-B SHEET #16
2¾" SLOT TYP UNLESS NOTED
BHD
TYP
3/16
DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 17


DETAIL 16-A
SCALE: 1½"=1'-0"
PIPE LACING ON VERT. BHD. STIFF.
PIPE
TYP
1/8 W.T.
DET 16-B
SLOT TO SUIT (CTRD)(TYP)
STRUCT 'T'
½" MIN (TYP)
2¾" SLOT (CTRD)(TYP)
DETAIL 16-B
PIPE CAP
SCALE: 6"=1'-0"
7.66" PL (MA)
1 9/16" R
1/4"
DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 16

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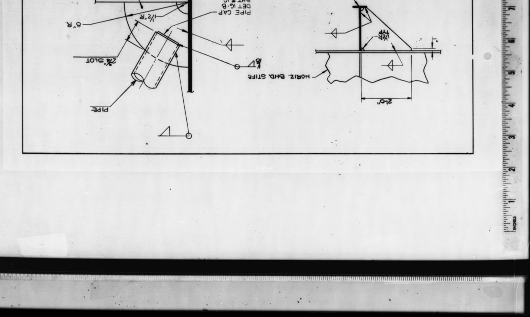
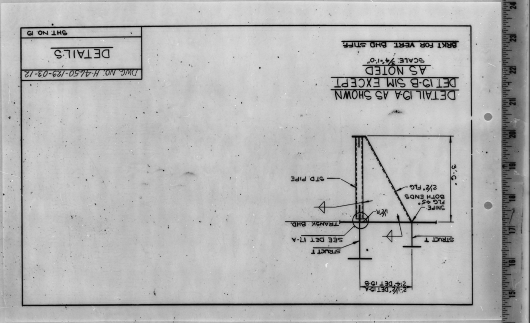
book FRAME 10 OF 16


DETAIL 18-A
SCALE: 3/4"=1'-0"
BRKT FOR VERT. BHD STIFF
HORIZ. BHD. STIFF
VERT T
2'-0"
1/2R TYP
DETAIL 18-B
SCALE: 3"=1'-0"
PIPE
2 3/4" SLOT
8"R
1 1/2"R
1/4
PIPE CAP
DET 16-B
SHT #16
1/8
DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 18


DETAIL 19-A AS SHOWN
DET 19-B SIM EXCEPT
AS NOTED
SCALE: 3/4"=1'-0"
BRKT FOR VERT. BHD STIFF.
STD PIPE
TRANSV. BHD.
SEE DET 17-A
STRUCT T
STRUCT T
1/2R
SNIPE-
FLG 45°
BOTH ENDS
2 1/2" FLG
3'-6"
2'-1 1/2" DET 19-A
2'-4" DET 19-B
DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 19

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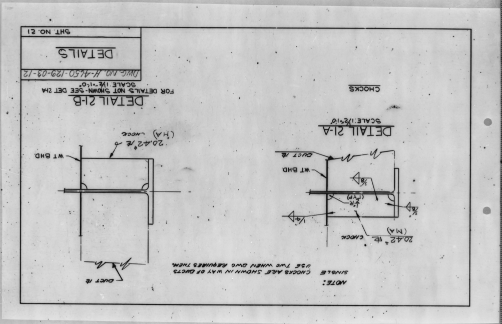
book FRAME 11 OF 16


WT BHD
DUCT PL
20.42# PL (HA) CHOCK
WT BHD
DUCT PL
¼"
⅜"
⅜"
½"R (TYP)
20.42# PL CHOCK (MA)

NOTE: SINGLE CHOCKS ARE SHOWN IN WAY OF DUCTS USE TWO WHEN DWG REQUIRES THEM.

DETAIL 21-B
FOR DETAILS NOT SHOWN - SEE DET 21A
SCALE: 1½"=1'-0"

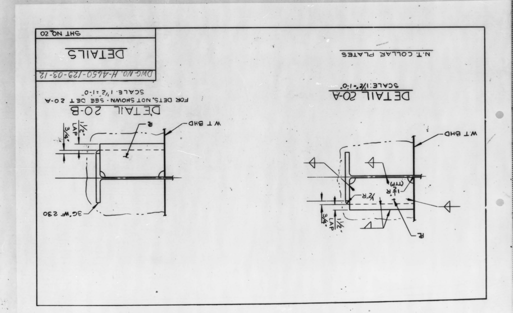
DETAIL 21-A
SCALE: 1½"=1'-0"

CHOCKS

DWG. NO. H-4650-129-03-12

DETAILS

SHT. NO. 21


3G"WF 230
½" LAP
¾"
PL
WT BHD
½"R
½"R (TYP)
½" LAP
¾"
PL
WT BHD

DETAIL 20-B
FOR DETS. NOT SHOWN - SEE DET 20-A
SCALE: 1½"=1'-0"

DETAIL 20-A
SCALE: 1½"=1'-0"

N.T. COLLAR PLATES

DWG. NO. H-4650-129-03-12

DETAILS

SHT NO. 20

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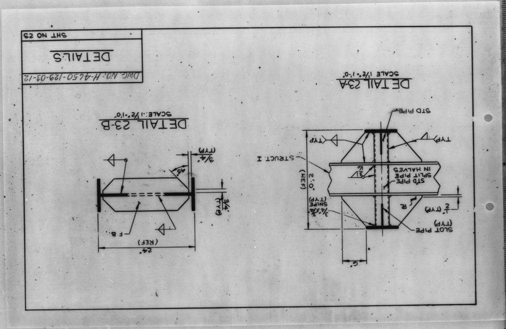
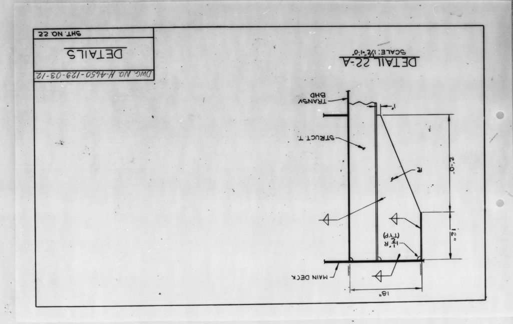
book FRAME 12 OF 16


DWG. NO. H-4650-129-03-12
DETAILS
SHT NO 23
DETAIL 23-B
SCALE: 1 1/2"=1'-0"
24" (REF)
F.B.
45°
3/4" (TYP)
3/4" (TYP)
DETAIL 23-A
SCALE 1 1/2"=1'-0"
STRUCT. I
2'-0" (REF)
3/4"x3/4" SNIPE (TYP)
6"
3/16
STD PIPE SPLIT PIPE IN HALVES
STD PIPE
SLOT PIPE (TYP)
PL
1/2" (TYP)
TYP
TYP


DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 22
DETAIL 22-A
SCALE: 1 1/2"=1'-0"
MAIN DECK
STRUCT. T.
TRANSV BHD
18"
1 1/2" R (TYP)
PL
1"
12"
2'-0"

6X

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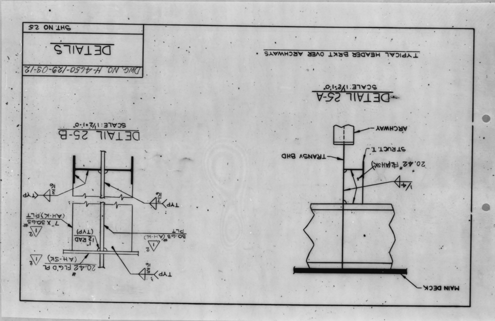
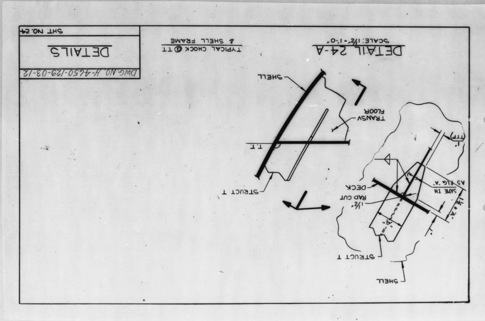
FRAME 13 OF 16


DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO 25
20.42# FLG'D PL (AH-SK)
1½" RAD (TYP)
30.63# (AH-K) PLT
7" X 30.63# (AH-K) PLT
TYP 5/16
TYP 7/16
3/16 TYP
DETAIL 25-B
SCALE: 1½"=1'-0"
TYPICAL HEADER BRKT OVER ARCHWAYS
DETAIL 25-A
SCALE: 1½"=1'-0"
ARCHWAY
TRANSV BHD
STRUCT. T.
20.42# ℄(AHSK)
1/4
MAIN DECK


DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 24
DETAIL 24-A
SCALE: 1½"-1'-0"
TYPICAL CHOCK @ T.T. & SHELL FRAME
SHELL
T.T.
STRUCT T
TRANSV FLOOR
1½" RAD CUT
DECK
SAME TH AS FLG "A"
1¼ x "A"
"A"
1"
(TYP)
STRUCT T
SHELL

6X

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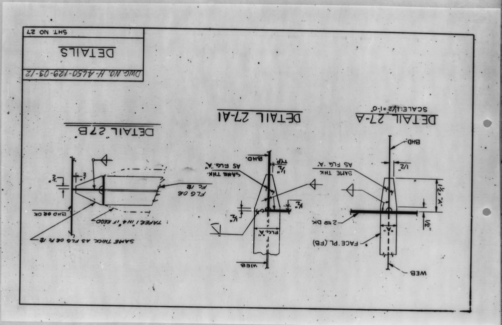
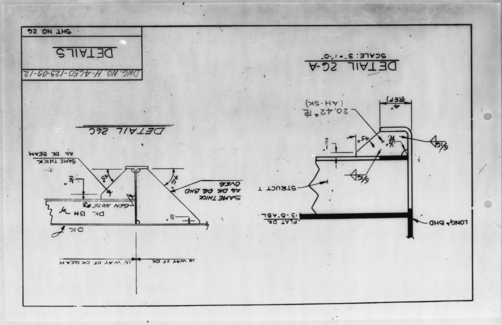
FRAME 14 OF 16


DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO 27
DETAIL "27B"
SAME THICK. AS FLG OR FC PL
BHD OR DK
1/2"
TAPER 1" IN 4" IF REQD.
FLG OR FC PL
DETAIL 27-A1
WEB
FLG. "A"
1/2"
SAME THK. AS FLG. "A"
BHD.
1/2" TYP.
DETAIL 27-A
SCALE: 1 1/2"=1'-0"
FACE PL (FB)
2ND DK
SAME THK AS FLG "A"
WEB
BHD.
1/2
"A"
1 1/2 x "A"


DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO 26
DETAIL 26C
IN WAY OF DK
IN WAY OF DK BEAM
DK
DK BM
GEN NOTE #3
SAME THICK AS DK BEAM
SAME THICK AS DK OR BHD OVER
45°
1/2
DETAIL 26-A
SCALE: 3"=1'-0"
FLAT DK 13'-8" ABL
STRUCT T
20.42# PL (AH-SK)
45°
5/16
4" (REF)
LONG'L BHD

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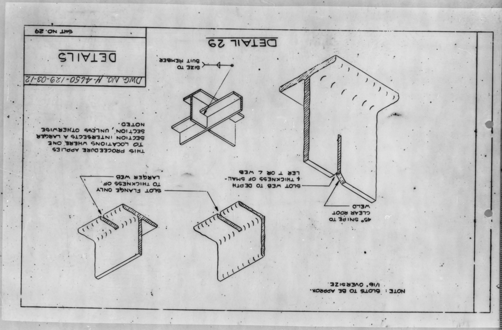
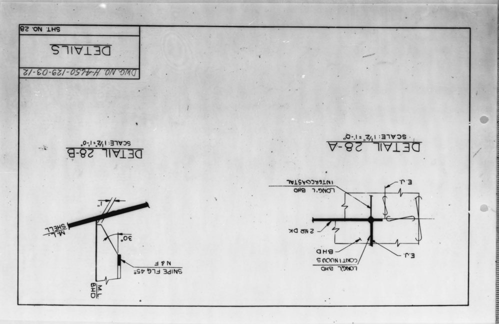
FRAME 15 OF 16


DETAIL 29
SLOT WEB TO DEPTH & THICKNESS OF SMALLER T OR L WEB
45° SNIPE TO CLEAR ROOT WELD
SLOT FLANGE ONLY TO THICKNESS OF LARGER WEB
SIZE TO SUIT MEMBER
DWG. NO. H-4650-129-03-12
DETAILS
SHT NO. 29

THIS PROCEDURE APPLIES TO LOCATIONS WHERE ONE SECTION INTERSECTS A LARGER SECTION, UNLESS OTHERWISE NOTED.

NOTE: SLOTS TO BE APPROX. 1/16" OVERSIZE.


DETAIL 28-A
SCALE: 1½" = 1'-0"
LONG'L BHD CONTINUOUS BHD
2ND DK
LONG'L BHD INTERCOASTAL
E.J.
E.J.
DETAIL 28-B
SCALE: 1½" = 1'-0"
M.L. SHELL
M.L. BHD
1"
30°
SNIPE FLG 45° N & F
DWG. NO. H-4650-129-03-12
DETAILS
SHT. NO. 28

49957 (Rev.A 11-79) WELDING 11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING		
THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C–25)
7. Unicore V90 or equal		CWE 209 FCAW "
8. AWS. A 5.17.69 EM12K (Lincoln 860–0 Flux)		CWE 301 SAW (Single) CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

- I MATERIAL DESIGNATION, MA MB
- II MATERIAL DESIGNATION, AH DH EH
- III MATERIAL DESIGNATION, A–514
- IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3

6X Sep 1980

BUILDERS PLAN NO. H-4650-129-03-12

book

FRAME 16 OF 16

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. H-4650-161-00-01

FRAME 1 OF 38

4651		4650
4650		4650
HULL	DESIGN	CHARGE

JOB Nº 161

BETHLEHEM STEEL CORPORATION.
SHIPBUILDING DIVISION.
SPARROWS POINT MD. 21219

SCALE.- NONE
DRAWN J. LOPEZ
CHECKED LT
REVIEW DTB-6-6-77

DATE 7 JUNE 1977
IN CHARGE L. THADEN
EXAMINED T. L. Mullin
APPᴰ R. Jackson

PLAN Nº H-4650-161-00-01 | ALT Nº 23

PAINTING SCHEDULE

	APPROVAL LETTERS.				
HULL	4650-51				
APPᴰ BY					
OWNERS	7/15/77	9/7/77			
A.B.S.					
USCG					
LLOYDS R.S.					
USPHS.	7/6/77	9/7/77	9/16/77	10/21/77	11/28/77
	5/10/78	5/14/78	5/25/78	6/14/79	

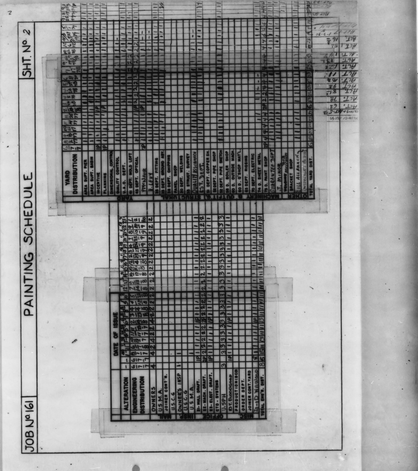
RESERVATIONS:

⚠6 4 1. INTERIORS + MACH'Y SPACES (PARTIAL) & ACCOMMODATIONS SPACES SHEETS WILL BE ADDED AT A LATER DATE

1st SUB 12/12/6

H-446

JOB Nº 161 | PAINTING SCHEDULE | SHT. Nº 2



	DATE OF ISSUE																							
ALTERATION	–	–	1	11	3	4	5	6	7	8	9	10	12	13	14	15	16	17	18	19	20	21	22	23
ENGINEERING DISTRIBUTION	6/7/7	6/7/7	8/1/7	6/7/8	10/13/7	11/11/7	11/28/7	2/14/8	3/23/8	4/4/8	4/12/8	5/23/8	7/14/8	9/13/8	10/17/8	10/26/8	12/4/8	2/23/9	3/27/9	4/26/9	7/23/9	8/10/9	9/18/9	1/2/80
MAIL OWNERS	4		4	2	4	2	2	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
U.S.M.A.																								
JOINER CONT'R.																								
U.S.C.G																								
INSP. OWNER'S INSP	1		1																					
U.S.C.G																								
U.S.M.A.			1																					
OFFICE 21- HULL DRAFT.		1P	1	1	1	1	1	1P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22- MACH. DRAFT.		2P	2	2	2	2	2	2P	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
23- ELECT. DRAFT.		1P	1	1	1	1	1	1P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CTD - SYSTEMS																								
U.SPH	3		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
MISC. D.T. BLOODGOOD		1P	1	1	1	1	1	1P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PRODUCTION (BCD)																								
ORDER DEPT.																								
JOINER CONT. YARD																								
29-1D WAWOOD		1P	1	1	1	1	1	1P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL ENG'R. DIST.	8	6	15	11	13	11	11	13	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

YARD DISTRIBUTION

YARD
AREA SUPT. PIER
AREA SUPT. BASIN
INCENTIVE
PLANNING
DIMENSIONAL CONTROL
QUALITY CONTROL
U.A.O. DEPT.
41 DEPT. MOLD LOFT
45 DEPT. OPTICAL
P. McNAIR
H. LEVY

STRUCTURAL
35 DEPT. FITTING
35 DEPT. GROUND ASY.
38 DEPT. CHIPPING
PANEL SHOP
30 DEPT. WELDING
35 STRUCT. SURVEY
QUALITY ASSURANCE
EST. DEPT.

MACHINERY & OUTFIT'G.
51 DEPT. COPPER SH.
52 DEPT. PIPE SHOP
52 DEPT. PIPE SKETCH
58 D. BOILER SHOP
60 D. OUTSIDE MACH.
60 D. O'SHOP MAT'L.
65 DEPT. RIGGING
70 DEPT. ELECTRIC
74 D. SHEET METAL
75 D. PAINT SHOP
GUARANTEE DEPT

OTHER
J. MINOR
~~WELDING~~ BOB MEECHUM
BRACKET SHOP
BILL ALLANACK
INSPECTOR'S BLDG.
TOTAL YARD DIST.

ALT. 6²³
ALT. 7⁸
ALT. 8²³
ALT. 9²³
ALT. 10²³
ALT. 11
ALT. 12²³
ALT. 13
ALT. 14
ALT. 15²³
ALT. 16²³

49974 (Rev.A 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C–25)
7. Unicore-V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860–0 Flux)		CWE 301 SAW (Single) CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A–514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3

JOB Nº161 4650-51 ALTERATIONS SHT. Nº 3

ALT Nº	SHT Nº	ITEM	DESCRIPTION.	BY.	APPROVAL BUILDER DATE	BUILDER BY	OWNER DATE	OWNER BY
1.	4	1.	PAINT Nº 33 CHANGED FROM FLOATCOAT TEXACO TO MAGNAKOTE-MAGNUS MARITEC INC	J. A. L.	7/27/77			
	5	2.	IN G.N. #6 REMOVED "AN APPROVED" & ADDED MAGNACOTE.					
	5	3.	ADDED NEW LINE TO G.N. #7					
	8	4.	IN G.N. #18-B, LINE 3 CHANGED TWO(2) COATS TO READ ONE(1) COAT					
	8	5.	ADDED G.N. # 21.					
	8A	6.	ADDED SHEET 8A.					
	9	7.	CORRECTED MDFT & TOTAL MDFT THK - LINES 2,7,13, 20 & 23					
	9	8.	LINES 14 & 24 ADDED					
	10	9.	CORRECTED MDFT & TOTAL MDFT THK - LINES 6,7,9,10,15,16,18,19, 29,30, 32 & 33.					
	10	10.	LINES 8,11,17 & 20 ADDED.					
	11	11.	CORRECTED MDFT & TOTAL MDFT THK - LINES 13,15,19, 26,29 & 33.					
	11	12.	LINES 14,17, 20,27, 30 & 34 ADDED.					
	12	13.	REVISED LINE 6.					
	12	14.	LINES 5 & 7 ADDED					
	13	15.	CORRECTED MDFT & TOTAL MDFT THK - LINES 10,13,14 & 32					
	13	16.	LINES 4,8, 15 & 30 ADDED.					
	14	17.	CORRECTED MDFT & TOTAL MDFT THK - LINES 5, 6, 9, 16 & 20.					
	14	18.	LINES 4, 7, 17 & 21 ADDED.					
	16	19.	LINE 14 ADDED.					
	17	20.	CORRECTED MDFT & TOTAL MDFT THK - LINE 14 & 22					
	17	21.	CHANGED PRIMER FROM FLOACOAT TO MAGNAKOTE - LINE 17.					
	18	22.	CORRECTED MDFT & TOTAL MDFT THK - LINE 5, 17 & 27.					
	19	23.	CORRECTED MDFT & TOTAL MDFT THK - LINE 15, 22 & 35.					
	19	24.	CHANGED PRIMER FROM FLOATCOAT TO MAGNAKOTE - LINE 10.					
	20	25.	CORRECTED MDFT & TOTAL MDFT THK - LINE 10, 13 & 31					
	20	26.	CHANGED PRIMER FROM FLOATCOAT TO MAGNAKOTE - LINE 26					
	21	27.	CORRECTED MDFT & TOTAL MDFT THK - LINE 4, 17 & 27.					
	22	28.	CHANGED PRIMER FROM FLOATCOAT TO MAGNAKOTE - LINE 4.					
	22	29.	LINES 6 & 7 ADDED.					
	22	30.	CORRECTED MDFT & TOTAL MDFT THK - LINE 9, 16 & 28.					
1.	23	31.	CORRECTED MDFT & TOTAL MDFT THK LINE 4, 21 & 29..	J. A. L.	7/27/77 JLM J 8/11/77			USAH 9/7/77
	23	32.	CHANGED PRIMER FROM FLOATCOAT TO MAGNAKOTE - LINE 16.					
	23	33.	LINE 18 & 19 ADDED.					
	24	34.	CORRECTED MDFT & TOTAL MDFT THK LINE 8, 18 & 30.					
	25	35.	CORRECTED MDFT & TOTAL MDFT THK LINE 4					
	25	36.	CHANGED PRIMER FROM FLOATCOAT TO MAGNAKOTE - LINE 33					
	26	37.	CORRECTED MDFT & TOTAL MDFT THK LINE 8, 12 & 22.					
	27	38.	CORRECTED MDFT & TOTAL MDFT THK LINE 14, 22 & 28.					
	28 & 29	39.	REVISED SHT# 28 & 29.					
	29A	40.	SHEET 29A ADDED.					
			ITEMS 1-38 ABV PER COMMENTS IN G.G.S. LTR 5587/819 DATE 12 JULY 77. ITEMS 39 & 40 ABV PER DEVELOPMENT OF REEFER HOLD INSULATION.					
2	5	1.	G.N. Nº 7, LINE 11, CHANGED PRE-TREATMENT PRIMER TO ZINC CHROMATE	J. A. L.	8/23/77 JLM J 8/26/77			USAH 9/16/77
	17	2.	REVISED LINES 3 TO 7 & DELETED LINE 8.					
	19	3.	REVISED LINES 3, 4 & 5.					
	20	4.	REVISED LINES 18, 19, 20 & 21.					
	21	5.	REVISED LINES 31, 32, 33 & 34.					
	22	6.	REVISED LINE 3.					
	23	7.	REVISED LINE 7, 8, 9 & 10					
	25	8.	REVISED LINE 8 TO 15, 19 & 23.					
	4	9.	PAINT Nº 11 & 12 REVISED THE VENDORS PAINT Nº ITEMS 1-9 ABOVE PER DEVELOPMENT					
3	5	1.	REVISED LINE 10 & 11 IN G.N. NO. 7.	J. A. L.				
	6	2.	ADDED LINE 4 & 5 TO G.N. NO. 14C.					
	7	3.	MOVED G.N. NO. 14G TO SHEET NO. 7					
	7	4.	REVISED G.N. NO. 15.					
	8	5.	REVISED SHEET NO. 8.					
	8A 8B	6.	ADDED G.N. SHT 8A. CHANGED SHT 8A TO 8B					
	12	7.	DELETED LINE NO. 8 UNDER FINISH.					
	13	8.	LINES 3, 4, 7, 8, 29 & 30 UNDER FINISH CHANGED PAINT NO. & COLOR.					
		9.	REVISED LINES 13 TO 14 & 17 TO 19.					
		10.	ADDED LINE 32 UNDER LOCATION. DELETED LINES 9 & 10 UNDER LOCATION.					

CONT'D ON SHT 3A

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. H-4650-161-00-01

FRAME 3 OF 38

JOB No 161 4650-51 **ALTERATIONS** SHT No 3A

ALT No	SHT No	ITEM	DESCRIPTION	BY	APPROVAL BUILDER DATE	BY	OWNER DATE	BY
3	14	11.	DELETED LINES 9 & 10 UNDER LOC.	J. A L	10/11/77	JLM 10/11/77 LT		
		12.	REVISED LINES 15, 16 & 17.					
	17	13.	REVISED LINES 13, 31 & 34.					
		14	DELETED LINE 32.					
		15.	ADDED LINE 35.					
	18	16.	REVISED LINES 4 & 16					
	19	17.	REVISED LINES 21 & 34.					
	21	18.	REVISED LINES 3 & 16.					
	22	19.	REVISED LINES 15 & 27					
	23	20.	REVISED LINE 28.					
	24	21.	REVISED LINE 7					
	29A	22.	REVISED LINE 10					
	5	23.	IN GEN. NOTE #5 LINE TWO REVISED TO READ WHITE EPOXY ENAMEL & LINE 3 REVISED TO READ BLACK EPOXY ENAMEL					
			ITEMS 1-22 & 23 ABV PER COMMENTS IN G.G.S. LETTER 5587/S19 DATE 31, AUG 1977					
4	28	1.	DELETED LINE 26 UNDER PRIMERS & FINISH.	J. A L	10/27/77	JLM 1/8/78 LT		
		2.	ADDED LINE 27 UNDER PRIMERS & FINISH.					
		3.	LINE 30 REVISED - CHANGED PRIMER FROM ZINC CHROMATE TO EPOXY YELLOW.					
	29A	4.	LINE 23 REVISED - CHANGED PRIMER FROM PRE-TREATMENT TO EPOXY YELLOW.					
		5.	DELETED LINE 24					
		6.	LINE 27 REVISED - CHANGED PRIMER FROM ZINC CHROMATE					
			ITEMS 1-6 ABOVE PER DEVELOPMENT.					
5	17	1.	LINE 32 UNDER FINISH CHANGED PAINT #5 TO #9 - NON-SKID RED.	J. A. L.				
	18	2.	LINE 32 UNDER FINISH CHANGED PAINT #5 TO #9 - NON-SKID RED.					
		3.	ADDED LINES 34 & 35.					
	20	4.	DELETED LINE 4 UNDER LOCATION & CHANGED PAINT #5 TO #9 UNDER FINISH.					
		5.	ADDED LINE 5 UNDER LOCATION & FINISH					
		6.	DELETED LINE 6 UNDER LOCATION & CHANGED PAINT #4 TO #5 UNDER FINISH.					
		7.	ADDED LINE 7 UNDER LOCATION & CHANGED PAINT #7 TO #4 UNDER FINISH.					
		8.	ADDED LINE 8 UNDER FINISH.					
5	21	9.	DELETED LINE 21 UNDER LOCATION & CHANGED PAINT #5 TO #9 UNDER FINISH.	J. A. L.	11/18/7	JLM		
		10.	ADDED LINE 22 UNDER LOCATION & FINISH.					
		11.	DELETED LINE 23 UNDER LOCATION & CHANGED PAINT #9 TO #5 UNDER FINISH.					
		12.	ADD LINE 24 UNDER LOCATION & CHANGE PAINT #7 TO #4 UNDER FINISH					
		13.	ADDED LINE 25 UNDER FINISH					
	22	14.	LINE 32 UNDER FINISH CHANGED PAINT #5 TO #9 - NON-SKID RED.					
		15.	ADDED LINE 33 UNDER LOCATION & FINISH.					
		16.	DELETED LINE 34 UNDER LOCATION & CHANGED PAINT #4 TO #5.					
		17.	ADDED LINE 35 UNDER LOCATION & CHANGED PAINT #7 TO #4.					
		18.	ADDED LINE 36 UNDER FINISH.					
	24	19.	LINE 12 UNDER FINISH CHANGED PAINT #5 TO #9 NON-SKID RED.					
		20.	ADDED LINE 13 UNDER LOCATION & FINISH.					
		21.	DELETED LINE 14 UNDER LOCATION & CHANGED PAINT #4 TO #5 UNDER FINISH.					
		22.	ADDED LINE 15 UNDER LOCATION & CHANGED PAINT #7 TO #4 UNDER FINISH.					
		23.	ADDED LINE 16 UNDER FINISH.					
			ITEMS 1,2,4,9,14 & 19 ABV PER COMMENTS IN G.G. SHARP LETTER 5587/S-19 DATED NOV. 11, 1977.					
			ITEMS 3, 5-8, 10-13, 15-18, 20-23 ABV PER DEVELOPMENT DUE TO COMMENTS OF G.G SHARP LETTER 5587/S-19 - DATED NOV. 11, 1977					
6	8B	1.	DELETED DIMS SHOWN FWD & AFT OF MIDSHIP (B.P.) ON SHELL, FROM KEEL TO L.L. WL & D.L.L. WL	J. A L.	2/13/8	JLM		
	15	2	"CHEMICAL MIXING TANK" ADD TO LINE 34					
	30&31	3.	REVISED SHEETS 30 & 31.					
	32-60	4.	DELETED ~~Rev~~ #1 & ADDED SHEETS 32 TO 66 INCLUSIVE.					
	12	5.	DELETED LINES 23, 24, 26, 27, 33, 34 & 35					
	12	6.	DELETED "FALSE STACK" FROM LINES 29 & 30					
			ITEMS 1 TO 4 ABOVE PER DEVELOPMENT					
			ITEMS 5 & 6 ABOVE PER CHANGE OF MATERIAL FROM ALUM TO FIBERGLASS BY OUTSIDE CONTR.					

USPHS 12-5-77

JOB No 161 4650-51 **ALTERATIONS** △7' SHT No 3B

ALT No	SHT No	ITEM	DESCRIPTION	BY	APPROVAL BUILDER DATE	BY	OWNER DATE	BY
7.	-	1.	ADDED SHEET 3-B.	J. A L		JLM 3/14/8	G&S 3/28/78	U.S.P.H 5/25/78
	8A	2.	ADDED GEN NOTE No 22					
	12	3.	LINE 12 - INCREASED NUMBER OF PRIMER COATS FROM 1 TO 2					
	31	4.	LINE 4 - DELETED UNDER FINISH (OILED) & ADDED PAINT No 10, 1 COAT, MOBIL ZINC, 2.5 MDFT.					
	47	5.	LINE 15 - UNDER PRIMERS DECREASED NUMBER OF COATS FROM 2 TO 1 & MDFT FROM 3.5 TO 2.5.					
	47	6.	LINE 28 - UNDER PRIMERS DECREASED NUMBER OF COATS FROM 2 TO 1 & MDFT FROM 3.5 TO 2.5.					
	49	7.	LINE 19 - UNDER PRIMERS DECREASED NUMBER OF COATS FROM 2 TO 1 & MDFT FROM 3.5 TO 2.5.					
	52	8.	LINE 22 - UNDER PRIMERS DECREASED NUMBER OF COATS FROM 2 TO 1 & MDFT FROM 3.5 TO 2.5.					
			ITEMS 1-8 ABOVE PER DEVELOPMENT.					
8	38	1	LINE 8 UNDER MDFT REVISED FROM 3.5 TO 4.0 & TOTAL FROM 5.0 TO 5.5	LHT		JLM 4/3/8		
	38	2	LINE 26 UNDER LOC. DELETED "ABV."					
	38	3	LINES 27, 29 & 30 DELETED					
	39	4	LINE 10 UNDER LOC. DELETED "ABV."					
	39	5	LINES 11, 13 & 14 DELETED.					
	42	6	LINE 15 UNDER LOC. REVISED LATEX MASTIC TO VINYL TILE					
	43	7	LINE 29 UNDER REMARKS "BY DECK COVERING CONTR. MOVED TO LINE 30					
	45	8	LINE 27 UNDER FINISH ADDED NON-SKID.					
	46	9	LINE 26 UNDER FINISH ADDED NON-SKID.					
	50	10	LINE 6 & 7 UNDER FINISH COLOR ADDED					
	51	11	LINE 11 UNDER LOC. REVISED.					
		12	LINE 32 UNDER FINISH COLOR ADDED.					
			ABV. ITEMS PER GGS. APPVL LTO DATED 3-13-78 ALE REF 5587/S19					
9	8	1.	ADDED ASTERISK NOTE TO BOTTOM OF SHT No 8.	J. A. L.	4/19/78	JLM 4/19/8		
	8B	2.	ADDED GEN NOTE No 23.					
	28	3.	LINE 23 UNDER LOC DELETED "INCLINED"					
		4.	LINE 24 UNDER LOC DELETED "LADDERS & HANDRAILS".					
		5.	ADDED LINE 34.					
			ABV ITEMS 1 & 2 REQUESTED BY 22 DEPT. ITEMS 3, 4 & 5, PER DEVELOPMENT.					
10	14	1.	LINE 12 UNDER PRIMERS ADDED DIMETCOTE.	J. A. L	5/23/78	JLM 5/23/8 LT	USPH 6/7/78	
	27	2.	DELETED LINES 21, 22 & 23.					
			ABOVE PER DEVELOPMENT					
11	8A	1.	ADDED GEN NOTE No 24	J. A L.	6/2/78	JLM 6/2/8 LT	USPH 6/7/78	
			ABV. PER G.G. SHARP LETTER 5605 - DATE FEB 16, 1978					
12	28	1.	UNDER LOCATION REVISED LINES 22, 23, 24 & ADDED LINE 25	J. A. L.	7/13/78	JLM 7/13/8 LT	USPH 8/2/78	
			ABOVE PER DEVELOPMENT					
13	5	1.	REVISED GEN NOTE No 6.	J. A. L.	9/8/78	JLM 9/8/8 LT	USPH 10-4-78	
			ABOVE PER DEVELOPMENT					
14		1.	SHEET No 3C ADDED	J. A L				
	4	2.	ADDED PAINT No 36 TO PAINT VENDORS SHEET.					
	24	3.	LINE 9 & 10 ADDED.					
		4.	REVISED LINE 11 & ADDED LINE 12 UNDER LOCATION.					
	25	5	LINES 5 & 6 ADDED.					
			(CONT'D ON SHEET No 3C)					

U.S.P.H 5/25/78

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. H-4650-161-00-01

FRAME 4 OF 38

JOB Nº161 4650-51 ALTERATIONS 14 SHT Nº 3C

ALT Nº	SHT Nº	ITEM	DESCRIPTION.	BY.	APPROVAL BUILDER DATE	BUILDER BY	OWNER DATE	OWNER BY
14	28	6.	LINE 18 UNDER FINISH, CHANGED PAINT Nº7 TO Nº 36, CHANGED COLOR FROM EPOXY WHITE TO BUFF, INCREASED MDFT FROM 4.0 TO 8.0, INCREASED TOTAL MDFT FROM 7.0 TO 11.0 AND ADDED COMMENT UNDER REMARKS COLUMN.	J. A. L.	USPHS 10-27-78 JLM LT 10/16/78			
		7.	LINE 27 UNDER PRIMERS, CHANGED PAINT Nº18 TO Nº19, TYPE FROM EPOXY YELLOW TO PRE-TREATMENT, DECREASED MDFT FROM 1.5 TO .5 & DECREASED TOTAL MDFT FROM 5.5 TO 4.5.					
	29	8.	LINE 19 UNDER PRIMERS, CHANGED PAINT Nº18 TO Nº19, TYPE FROM EPOXY YELLOW TO PRE-TREATMENT, DECREASED MDFT FROM 1.5 TO .5, UNDER FINISH, CHANGED PAINT Nº7 TO Nº36, CHANGED COLOR FROM EPOXY WHITE TO BUFF, INCREASED MDFT FROM 4.0 TO 8.0, INCREASED TOTAL MDFT FROM 5.5 TO 8.5 & ADDED COMMENT TO REMARKS COLUMN.					
		9.	LINE 21 UNDER FINISH, CHANGED PAINT Nº7 TO Nº36, CHANGED COLOR FROM EPOXY WHITE TO BUFF, INCREASED MDFT FROM 4.0 TO 8.0, INCREASED TOTAL MDFT FROM 7.0 TO 11.0 AND ADDED COMMENT UNDER REMARKS COLUMN. ABOVE ITEM 5 PER 22 DEPT REQUEST ABOVE ITEMS 1, 3 & 4 PER DEVELOPMENT ABOVE ITEMS 2, 6, 7, 8 & 9 PER COMMENTS - G.G. SHARP LETTER 5605/519 - DATE 10/3/78					
15	28	1	REVISED LINES 18 TO 25 INCLUSIVE ABV ITEM PER G.G.S. RESIDENT INSPEC REQUEST	J.A.L.	JLM LT 10/25/78		USPH 11-13-78	

ALT Nº	SHT Nº	ITEM	DESCRIPTION	BY	APPROVAL BUILDER DATE	BUILDER BY	OWNER DATE	OWNER BY
16	41	1. 2.	REVISED LINES 4 & 6 ADDED SHEET "4-A". ABV ITEMS PER DEVELOPMENT	J. A. L. USPH 12-13-78	JLM LT 12/1/78			
17	29	1.	ADDED LINES 33, 35 & 36 ABV ITEM PER DEVELOPMENT	J. A. L. USPH 3-13-79	JLM LT 2/13/79			
18	4	1.	PAINT NO. 32 CHANGED THE DESCRIPTION FROM FLUORESCENT YELLOW TO VINYL ACRYLIC YELLOW, ADDED VENDORS PAINT NO. 3512 & ADDED VENDORS NAME.	G.H.			U.S.PH 6/14/79	
	18, 20 & 27	2.	CHANGED PAINT NO. 35 TO 32 & CHANGED MDFT FROM .5 TO 2.0 ON SHEET NOS 18 LINE 27, 20 LINE 13 & 27 LINE 31.					
	11, 17, 19, 20, 22, 23, & 27	3.	CHANGED MDFT FROM .5 TO 2.0 ON SHEET NOS 11 LINE 21, 17 LINE 22, 19 LINE 15, 20 LINE 31, 22 LINE 9, 23 LINE 21 & 27 LINE 28.					
	8	4.	REVISED NOTE 18 B. DEVELOPMENT PER D.T.B. LETTERS DATED 2-16-79 & 3-22-79 TO R.A.J.		JLM LT 3/23/79			
19	3D	1.	ADDED ALTERATION SHEET Nº 3D.	J. A. L.				
	6	2.	ADDED GENERAL NOTE Nº 13-J.					
	41	3.	DELETED PRIMER ON LINES 14 & 25.					
	42	4.	DELETED PRIMER ON LINES 15 & 24.					
	43	5.	DELETED PRIMER ON LINES 19 & 30.					
	45	6.	DELETED PRIMER ON LINE 13.					
	46	7.	DELETED PRIMER ON LINE 6.					
	47	8.	DELETED PRIMER ON LINE 18.					
	48	9.	DELETED PRIMER ON LINES 9 & 18.					
	49	10.	DELETED PRIMER ON LINES 7, 9 & 31.					
	50	11.	DELETED PRIMER ON LINE 11.					
	52	12.	DELETED PRIMER ON LINES 6, 8, 10 & 12. (CONT'D ON SHEET Nº 3D)					

JOB Nº161 4650-51 ALTERATIONS 19 SHT Nº 3D

ALT Nº	SHT Nº	ITEM	DESCRIPTION.	BY.	APPROVAL BUILDER DATE	BUILDER BY	OWNER DATE	OWNER BY
19	53	13.	DELETED PRIMER ON LINES 3 & 33.	J. A. L.	4/17/79	JLM 4/17/79		USPH 6/14/79
	54	14.	DELETED PRIMER ON LINE 12.					
	56	15.	DELETED PRIMER ON LINES 8, 10, 12, 14 & 16.					
	58	16.	DELETED PRIMER ON LINES 13, 15, 17 & 20.					
	62	17.	DELETED PRIMER ON LINE 3.					
	63	18.	DELETED PRIMER ON LINE 10.					
	64	19.	DELETED PRIMER ON LINE 6.					
	66	20.	DELETED PRIMER ON LINE 6. ABV ITEMS PER DEVELOPMENT					
20	22	1.	ADDED LINES 17 & 18 ABV ITEMS PER DEVELOPMENT	J. A. L.		JLM 7/19/79	7-25-79	USPH 9-7-79
21	22	1.	REVISED LINES 17 & 18 ABV ITEM TO AGREE WITH Y&S H-4650-21-1017 - DATED 7/31/79	J. A. L.	7/31/79	8/1/79	8/8/79	USPH 9-7-79
22	4	1.	DELETED PAINT Nº 32.	J. A. L. LT	9/11/79	JLM 9/14/79		USPH 10-9-79 9/17/79
	4A	2.	ADDED PAINT Nº 38.					
	17	3.	LINE 22, UNDER FINISH, CHANGED PAINT Nº 32 TO Nº 38.					
	18	4.	LINE 27, UNDER FINISH, CHANGED PAINT Nº 32 TO Nº 38.					
	19	5.	LINE 15, UNDER FINISH, CHANGED PAINT Nº 32 TO Nº 38.					
	20	6.	DELETED LINES 13, 14 & 15					
		7.	LINE 31, UNDER FINISH, CHANGED PAINT Nº 32 TO Nº 38.					
	22	8.	LINE 9, UNDER FINISH, CHANGED PAINT Nº 32 TO Nº 38.					
	23	9.	LINE 21, UNDER FINISH, CHANGED PAINT Nº 32 TO Nº 38.					
	27	10.	LINES 28 & 31, UNDER FINISH, CHANGED PAINT Nº 32 TO Nº 38.					
	29	11.	LINE 35, UNDER FINISH, CHANGED PAINT Nº 32 TO Nº 38.					
	8A	12.	GEN. NOTE Nº 23, LINE 11, CHANGED COLOR FROM WHITE TO LIGHT BLUE.					
	14	13.	ADDED LINE 9, UNDER LOCATION. ABV ITEMS 1 TO 11 & 13 PER D. BLOODGOOD MEMO - 7/22/79 ITEM 12 PER DEVELOPMENT TO SUIT U.S.P.H. REGULATIONS					

ALT Nº	SHT Nº	ITEM	DESCRIPTION	BY	APPROVAL BUILDER DATE	BUILDER BY	OWNER DATE	OWNER BY
23	4	1.	DELETED PAINT Nº 2.	J. A. L. USPH 1-31-80	JLM 12/11/79			1/80
	5	2.	ADDED PAINT Nº 39, 40, 41, 42, 43 & 44.					
	7	3.	UNDER GEN NOTE 16, REVISED LINES 38 TO 43 & DELETED LINE 44					
	9	4.	REVISED LINE 2. UNDER PRIMER DECREASED NUMBER OF COATS FROM 3 TO 1 AND MDFT FROM 6.5 TO 2.5. UNDER FINISH CHANGED PAINT NUMBER 2 TO 39, INCREASED MDFT FROM 1.5 TO 2.0 AND INCREASED TOTAL MDFT FROM 8.0 TO 8.5.					
		5.	ADDED LINE 3 & 4 UNDER PRIMERS.					
		6.	ADDED LINE 6 UNDER LOCATION & FINISH.					
		7.	REVISED LINE 7 UNDER FINISH. CHANGED PAINT Nº 2 TO 39, INCREASED MDFT FROM 1.0 TO 4.0 & INCREASED TOTAL MDFT FROM 9.0 TO 10.0.					
		8.	UNDER REMARKS ADDED NOTE.					
	14	9.	ADDED LINES 24, 25, 26, 27, 28, 30, 31, 33 & 34. ABV ITEMS 1 TO 9 PER D. BLOODGOOD MEMO - DEC 3, 1979					

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JOB Nº 161 — PAINTING SCHEDULE — SHT. Nº 4

PAINT Nº	DESCRIPTION	VENDORS PAINT Nº	VENDOR
1	ALUMINUM BARRIER	59-A-4	MOBIL
~~2~~	~~TROPICAL SUPERSERVICE ANTI-FOULING~~	~~59-D-1~~	
3	HIGH-BUILD BLACK BARRIER	59-J-4	MOBIL
4	SOVAPON HI-BUILD EPOXY - GRAY	65-F-15	
5	- RED	65-R-10	
6	- BLACK	65-J-5	
7	- WHITE	65-W-9	
8	- BUFF	65-D-	
9	- RED NON-SKID	65-R-10NS	
10	MOBILZINC	13-G-10	
11	SOVAPON HI-SOLID EPOXY - GRAY	264-F-105	
12	SOVAPON HI-SOLID EPOXY - WHITE	264-W-105	
13	SILICONE HEAT RESISTANT - ALUM	537-A-1	
14	ZINC CHROMATE PRIMER	53-Y-1	
15	DECK GRAY	58 SERIES	
16	INTERGARD HI-SOLID - BLUE	4421/4423	INTERNATIONAL
17	INTERGARD HI-SOLID - WHITE	4424/4423	
18	EPOXY PRIMER - YELLOW	4437	
19	PRIMER PRE-TREATMENT	1757/1758	
20	STANDARD ALUMINUM	1178	
21	SPAR VARNISH - SUPER SPAR	A-149	
22	COAL TAR EPOXY	BITOXY 4454/4459	
23	DEVRAN NON-SKID - RED	237-G	DEVOE & RAYNOLDS
24	GLOSS ENAMEL - WHITE	MD-25001	
25	SEMI-GLOSS ENAMEL - WHITE	MD-26301	
26	FIRE RETARDANT - WHITE	MD-7780	
27	CATHACOAT	308	
28	PHILLY-CLAD	8008	PHILADELPHIA RESIN
29	PHILLY-CLAD	6470	
30	DIMETCOTE	Nº 3	AMERON
31	ASPHALT VARNISH	—	
~~32~~	~~VINYL ACRYLIC YELLOW~~	~~3512~~	~~INTERNATIONAL~~
33	MAGNAKOTE	—	MAGNUS MARITEC INT'L
34	CATHACOAT	302	DEVOE & RAYNOLDS
35	EPOXY-RED	21A-R-105	MOBIL
36	URETHANE ELASTOMETER	PR-1539-US	PRODUCTS RESEARCH & CHEMICAL CORP. (BY OUTSIDE CONTRACTOR)

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JOB Nº 161 — 4650-51 — PAINTING SCHEDULE — SHT. Nº 4A

PAINT Nº	DESCRIPTION	VENDORS PAINT Nº	VENDOR
37	ASPHALT EMULSION	102	FLINTKOTE
38	DAYGLO FLUORESCENT YELLOW	—	DAYGLO CORP
39	COASTAL SUPER SERVICE ANTI-FOULING	59-R-7	MOBIL
40	SILVER PRIMOCON	1744	INTERNATIONAL
41	SILVER PRIMOCON - HB	HB-1744	
42	OFFSHORE ANTI-FOULING	1605	
43	VINYL PITCH VITAR	G 3222	
44	INTERGUARD GLASS FLAKE EPOXY	4491/4489	

JOB Nº 161	PAINTING SCHEDULE	SHT Nº 5

GENERAL NOTES.

1. It is intended that all exterior and interior surfaces of the ship as well as all its equipment and appurtenances shall be coated with approved compositions after proper and adequate surface preparation. All parts of spaces or whole spaces not specifically mentioned herein shall be cleaned and coated to conform to the surrounding or comparable spaces.

2. Unless otherwise specifically required herein, all paints and coating materials shall conform to the latest issues of applicable specifications, or, with the Owner's concurrence, be best grade commercial brands. Where no specification is listed, as for fillers and stains, the Contractor may employ commercial grades of material. Unless otherwise specified, paints and coatings must not be thinned with solvent or altered in any manner, by the Contractor.

3. Permanently finished doors, frames, bulkheads, etc., shall be effectively protected as necessary to prevent marring or damage during construction and outfitting of the ship. All fixtures, deck coverings, electrical equipment, nameplates, machinery working surfaces, rubber gaskets, working threads, label plates, etc., shall be properly protected during painting operations and on completion of the work all paint or other smudges removed. Within living and messing spaces, hardware, finger plates, etc., shall be removed prior to painting and replaced on completion.

4. Where thickness readings are specified as MDFT (minimum dry film thickness in mils) and number of coats are specified, both minimum requirements shall be fully met. Wherever minimum dry film thickness is specified herein, film thickness shall be determined with a magnetic type gage such as mikrotest film thickness gage. The specified dry film thickness shall be regarded as the minimum film thickness for both individual coats and complete systems. The number of instrument readings taken should be 10 per 1000 square feet. When using a single contact instrument, such as mikrotest, etc. it shall be 10 individual readings. When using a two contact instrument such as elcometer, etc., a single reading shall consist of the average of two determinations made perpendicular to each other, equidistant from the center point formed by the interjection of two planes. At least 85% of the film thickness readings shall be at the specified minimum film thickness readings and the remaining 15% of the film thickness readings shall not be less than 90% of the specified thickness.

△3^{23} 5. Above the light load line, load line, draft marks and hailing port, shall be top-coated with two (2) coats of white epoxy enamel. The ship's name shall be top-coated with two (2) coats of black epoxy enamel. Below the light load line, draft marks shall be coated with two (2) coats of white enamel.

△13^{1} △1^{2} 6. The rudder shall be internally preserved with magnacote rust preventative compound applied by the floatation method. The rudder horn shall receive the same treatment as described above, except where noted on dwg. H-4650-129-03-13 - sheet #1.

△1^{3} △2^{1} △3^{1} 7. Aluminum, brass, bronze, copper and galvanized metal when not intended to be self-decorative shall, when required to be painted, first be thoroughly cleaned with solvent. In lieu of solvent cleaning of aluminum and galvanized metal commercial cleaning agents which deposit a phosphate film may be employed and pretreatment primer may be omitted where painting is required. Where stainless steel is required to be painted, it shall first be thoroughly cleaned with a 10% solution of nitric acid. After priming with wash primer and two coats of zinc chromate primer, (one coat for interior applications) the above materials shall receive two finish coats. Generic types of vehicles shall be the same as for the surrounding areas. Galvanized chain rails, treaded walkways and anodized aluminum need not be painted. Faying surfaces of alum. to alum. or to dissimilar metals shall be protected from corrosion by application of one coat of pre-treatment primer to each faying surface.

8. Wood grating and battens (except in cargo holds) shall be properly filled, smoothed, stained and finished with two (2) coats of Spar Varnish. Wood teak hand rails shall be oil rubbed.

9. All areas to be coated with inorganic zinc or epoxy products are to be prepared and coated in accordance with the manufacturer's recommendations. Surface preparation shall meet and not exceed the requirements of general note 13 A & B.

10. A complete coating system will be applied from the keel to lower boot top line, including bow thruster tunnel, rudder and appurtenances. Areas that will be covered during construction by blocks, etc. and will not be exposed prior to the ship being floated will receive the undercoats, plus one (1) coat of anti-fouling prior to placing the units in the building basin. At each drydocking, prior to delivery, all bare areas shall be abrasive blasted prior to repainting. All areas shall be cleaned free of soil and contamination prior to painting. Surface shall be dry prior to painting.

At the first drydocking prior to delivery all bare and damaged areas shall be repaired bringing the system up to the specified film thickness with the specified anti-corrosive material. If the ship has been in the water, four months or less, one (1) full coat of anti-fouling paint will be applied directly over the repaired areas and the intact anti-fouling paint. If the ship has been in the water more than four (4) months and as mutually

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JOB Nº 161	PAINTING SCHEDULE	SHT Nº.6

GENERAL NOTES.

agreed by the owner's representative, coating vendors representative and the Shipyard, the same procedure will be followed. After six (6) months in the water and if between the four (4) and six (6) months period the anti-fouling paint has deteriorated as agreed by the above parties, one (1) full coat of anti-corrosive will be applied prior to the application of the one (1) full coat of anti-fouling paint.

11. A preconstruction primer may be used following initial surface cleaning, at contractor's option. Where so used it need neither be removed when compatible with system following, nor be renewed. If not removed it shall be considered a part of the total MDFT of the completed system. Where preconstruction primer is used, it will be Cathacoat No. 308.

12. The Contractor shall anticipate paint and coating requirements, allowing ample time for delivery, in order to permit the Owner to make complete, orderly inspection or analysis of materials when required. The Owner will provide the Contractor with a complete schedule of all paint colors or finishes and thereafter the Contractor shall prepare and submit samples of all colors and finishes to the Owner. The Contractor shall not commence work until samples have been approved by the Owner.

13. Steel Surface Preparation

A. All interior areas of the Structural Hull and superstructure requiring painting, except where epoxy or inorganic zinc is required, shall be cleaned to a minimum commercial finish as defined by specification SSPC-6-63.

B. Where inorganic zinc silicate, or epoxy as first coat is specified, steel shall be blasted to near white metal, equivalent to Steel Structures Painting Council specification SP10, immediately prior to application of the coating except that white metal blast, SP-5, shall be used for immersion service.

C. Blast cleaning noted above may be done prior to fabrication, at sub-assembly, or after erection at the Yards option.

D. Prior to application on the balance of the system specified in this schedule, areas of coating damage, welds and rust spots are to be thoroughly cleaned. Prior to the application of coating materials, all surfaces shall be dry and free from foreign matter, such as: Crayon marks, dirt, dust, grease, heat and mill scale, oil, residual abrasive from blasting, rust, salt deposits, weld spatter, etc.

E. After erection, all welds, masked and damaged areas are to be blast cleaned, but need not be coated with preconstruction primer prior to application of succeeding coats.

F. Fuel oil tanks are to be cleaned of all mill scale and left uncoated or, at the Yards option, may be coated with preconstruction primer, in which case the primer is not to be maintained.

H. When necessary, scuppers shall be temporarily sealed off and overhead drains, plugger or led clear, so that the hull will remain dry and clean for painting.

△19^{2} J. Decks which receive deck covering must be cleaned of all loose paint, grease, loose rust and scale by power tool cleaning.

14. Painting

A. After cleaning as specified in General Notes 9 and 13 systems outlined in the detailed sections of this schedule are to be applied.

B. Prior to application of the specified primer, the intact preconstruction primer is to be brush blasted to remove accumulated salts and dirt.

△3^{2} C. Application of intermediate and finish coats may be applied at sub-assembly, or after erection at the Yards option. However exterior surfaces above and inboard of the bulwark shall not receive finish coats earlier than one (1) month prior to delivery, except for decks which shall be coated with complete system as soon as possible after inorganic zinc has cured.

D. Areas of subsequent coating damage are to be repaired as required for the specific area, with edges well feathered and the system restored to the specified minimum dry film thickness.

E. Prior to the application of any coat, all bare spots in the preceding coat shall be thoroughly cleaned and touched-up.

F. In the machinery spaces, the final coat may be applied prior to, or after, trials. If applied prior to trials, all surfaces which become soiled, or otherwise damaged, shall be repaired prior to ship delivery.

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JOB Nº 161

PAINTING SCHEDULE

SHT Nº 7

GENERAL NOTES

$\triangle 3^{3}$ G. Tween decks shall have a yellow painted stripe three (3) inches wide, with the innermost edge 36 inches from the hatch coaming.

H. Priming, painting or coating of erection welds in compartments or tanks required to be tested will not be accomplished until after completion of such tests.

I. The propeller and anodes are not to be painted. A protective shield is to be installed in way of impressed current anodes.

15. Anchor Chain Marking

$\triangle 3^{4}$ A. Anchor chain shall be painted in accordance with MarAd specification No. MAP-49b.

B. Anchor chain shall be given one (1) coat of asphalt varnish Fed. Spec. TT-V-51E, except that the links indicated below shall receive one (1) coat of zinc chromate primer, TT-P-645, as a substitute for the varnish. Finish colors are as follows:

1. One link on either side of the 15-fathom detachable link shall be painted with two (2) coats of white enamel, 52-MA-106B or equal.
2. Two links on either side of the 30-fathom detachable link shall be painted with two (2) coats of white enamel, 52-MA-106B or equal.
3. Three links on either side of the 45-fathom detachable link shall be painted with two (2) coats of white enamel, 52-MA-106B or equal - and repeat.
4. The last 15-fathom shot inboard shall receive two (2) coats of red deck paint, 52-M-153C or equal.
5. The 15-fathom shot adjoining the last 15-fathom shot inboard shall receive two (2) coats of yellow, 52-MA-101A or equal.
6. All shot to shot detachable links shall be painted with two (2) coats of red enamel.

C. The chain shall be marked by turns of seizing wire on the studs of certain links, the number of links, counting away from the detachable link, being used as a marker for that shot, as follows:

1. First link at each side of the 15-fathom detachable link - one (1) turn.
2. Second link at each side of the 30-fathom detachable link - two (2) turns.
3. Third link at each side of the 45-fathom detachable link - three (3) turns - and repeat.

16. Rudder Nosing Coating

The rudder nosing plate will be coated with an epoxy-flakeglass coating as manufactured by the International Paint Company under the name Intergard Glass-Flake. The coating will be applied to a minimum dry film thickness of 25 mils.

The steel substrate will be abrasive blasted to a minimum near-white finish in accordance with the Steel Structures Painting Council Specification SSPC-10-63T prior to the application of the Intergard Glass-Flake.

$\triangle 23^{3}$ Prior to the application of the anti-fouling paint over the Glass - Flake coating, apply one (1) coat of Vitar (Paint No. 43) to 3.0 Mils DFT, while the Glass - Flake coating is still tacky. The aluminum barrier anti-corrosive which will be applied to the bare steel areas of the underwater hull will be overlapped on the Glass Flake coating, the first coat being applied to the Vitar. The Vitar will be overcoated in a minimum time of four (4) hours.

17. Interior Machinery - 200°F or higher

Boiler drums and associated pipes, valves and fittings, evaporators, etc., piping and sheet metal work such as inside boiler casing: One (1) coat of Mobil #537-A-1 heat resist silicone paint where insulated; two (2) coats where not insulated, for a total of 4.0 MDFT.

A. Interior Machinery - below 200°F.

If factory painted, not painted unless damaged or not in color harmony.

If not factory painted, non-working ferrous surface to receive one (1) coat of Mobil 53-Y-1, zinc chromate primer and two (2)coats of International #1178 standard aluminum for a 4.0 MDFT.

JOB Nº 161

PAINTING SCHEDULE

SHT Nº 8

GENERAL NOTES

$\triangle 3^{5}$

B. Feed Heaters and Atmospheric Drain Tank

One (1) coat of Mobil zinc 13-G-10 for a 2.5 MDFT.

C. Exterior Machinery

See appropriate surface area in schedule.

*D. Piping
Where exposed, piping identification shall show both flow direction by an arrow and indicate fluid flowing by color code about once every ten feet. Stenciling or labeling shall be provided at least once in each space traversed. Compressed gas bottles shall have identifying paint colors and neck bands as required by Military Standard 101.

18. *Piping (Steel) - 200°F or higher

Two (2) coats of Mobil 537-A-1 heat resisting silicone paint where not insulated, two (2) coats of color to match surroundings where insulated.

*A. Piping (Steel) - Below 200°F

Ferrous, ungalvanized, insulated, one (1) coat of Mobil 53-Y-1 - Total of 1.5 MDFT.

Ferrous, ungalvanized, not insulated, two (2) coats of Mobil 53-Y-1 - Total of 3.0 MDFT.

Ferrous, galvanized, insulated, not painted.

Ferrous, galvanized, not insulated and exposed to view, one (1) coat of International 1757/1758 and one (1) coat of Mobil 53-Y-1 - Total of 2.0 MDFT.

All the above piping, where exposed to view, shall receive two (2) finish coats to match surroundings.

$\triangle 1^{4}$ $\triangle 18^{4}$ B. THE FOLLOWING WILL BE FOLLOWED FOR COATING GALVANIZED PIPING WHICH IS LOCATED IN ANY DIESEL OIL TANK: WASH THE GALVANIZED PIPE WITH SOLVENT; AFTER SOLVENT EVAPORATES APPLY ONE (1) COAT OF MOBIL # 264-F-105 AND ONE(1) COAT OF MOBIL # 264-W-105 TO A DRY FILM THICKNESS OF 8 MDFT (4 MILS PER COAT).

C. Piping Lagging

Two (2) coats of color to match surroundings.

19. Foam and Cementing

A. Foam as required in inaccessible portions of the void formed between the main deck and the false deck within the deck house, in all closed bases of mooring fittings and deck machinery, shall be Polyurethane foam at a density of 2 pounds per cubic foot. Reasonable care shall be taken that voids are not formed during the foaming process. The accessible area under the house shall be treated as per schedule.

B. Inaccessible places in the ship, such as the inaccessible portions of the aft peak tank shall be filled with cement and provided with proper drainage. Where a considerable depth of cement is used for filling a thin coating of neat cement shall be applied to the steel which shall have been thoroughly cleaned. Cement filling shall be thoroughly tamped in place and shall be cured by keeping them moist for about ten (10) days. They shall not be used in confined spaces subject to unusual vibrations, such as shaft tubes. Cement fillings shall be "Haydite," expanded shale type.

20. Electrical Equipment

A. Cableways and mounting brackets for lighting fixtures and other electrical equipment are to be given a primer similar to the structure on which mounted, except, exterior cable clips to be dip-primed prior to installation. Apply two (2) finish coats to match surroundings.

$\triangle 9^{1}$

*See General Note number 23 for color code.

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JOB No 161

PAINTING SCHEDULE

SHT No 8A

GENERAL NOTES

B. Armor cable to be prime to suit armor. Apply two (2) finish coats to match surroundings.

21. Riveted or bolted faying surfaces exposed to weather or dampness shall be further protected by application of joint sealing material of 0.050 inch thickness.

22. Uninsulated interior surfaces of shell, superstructure, deckhouse, or other areas if subject to condensation shall be coated as follows:

1. Apply two (2) coats of zinc chromate primer (3.0 mils total DFT).

2. Apply one coat of vermiculite anti-sweat paint.

3. After drying apply two (2) coats of finish paint to match surroundings.

23. SYSTEM COLOR CODE

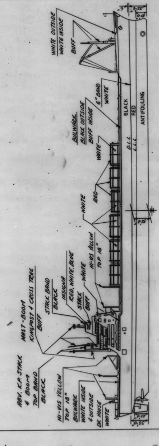
Where exposed, piping identification shall show flow direction by an arrow and indicate fluid flowing by color code bands about one every ten feet. Stenciling or labeling shall be provided at least once in each space traversed. Compressed gas bottles shall have identifying paint colors and neck bands as required by MIL. STDN. 101A.

Yellow - Flammable Materials
Brown - Toxic and Poisonous Materials
Blue - Harmful Chemical
Green - Oxidizing Materials
Gray - High Temperature or Pressure
Red - Fire Protection Material or Equipment
Light Blue - Potable or Drinking Water Systems

Arrow - Same Color Code as Band
Stenciling - Same Color Code as Band or Black for Pipe not Coded
Double End Arrow - For Reversible Flow

24. For Compound Embedding Bow Crest on Bow see General Note 6 on Dwg. H-4650-232-00-39.

JOB No 161 4650-51 SHT. No 8B


ABV. K.P. STACK & BOOM
TOP BAND
BLACK
MAST-BOOM
KINGPOST & CROSS TREE
BUFF
STACK BAND
BLACK
INSIGNIA
RED, WHITE, BLUE
STACK
BUFF
WHITE
HI-VIS YELLOW
TOP 18"
BULWARK
WHITE INSIDE
& OUTSIDE
DK. HOUSE
WHITE
HI-VIS YELLOW
TOP 18"
WHITE
RED
WHITE
BULWARK
BLACK OUTSIDE
BUFF INSIDE
6" BAND
WHITE
WHITE OUTSIDE
WHITE INSIDE
BUFF
D.L.L.
L.L.L.
BLACK
RED
ANTIFOULING

OUTBOARD PROFILE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910
Oct 1980 6X
BUILDERS PLAN NO. H-4650-161-00-01
FRAME 8 OF 38

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PAINT SCHEDULE

HULL NO 4650-51 — JOB NO 161-1 — SHEET 9

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	EXTERIOR	1										NOTE: $\triangle 23^{8}$
$1^7, 23^8$	KEEL TO LOWER BOOTTOP LINE	2	1	1	ALUMINUM BARRIER	2.5	39	1	ANTI-FOULING	2.0	8.5	LINES 2, 3, 4, 6 & 7
23^5	INCLUDING BOW THRUSTER TUNNEL,	3	3	1	BLACK BARRIER	2.0						APPLIES TO H4651 ONLY.
23^5	RUDDER & APPURTENANCES BEFORE	4	1	1	ALUMINUM BARRIER	2.0						SEE SHEET Nº 14 FOR
	LAUNCHING.	5										UNDER WATER COATING
23^6	TURN OF BILGE TO LOWER BOOTTOP	6					39	1	ANTI-FOULING	2.0	10.5	OF H4650, LINES 24,
$1^7, 23^7$	SEA CHEST	7	28	1	PHILLY-CLAD	6.0	39	2	ANTI-FOULING	4.0	10.0	25, 28, 30, 31, 33 & 34.
		8										
	LOWER BOOTTOP TO UPPER BOOTTOP LINE	9	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
		10					5	1	EPOXY-RED	4.0	10.5	
		11										
	UPPER BOOTTOP LINE TO TOP OF RAIL	12	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^7	OUTER BULWARK, FWD OF FWD END	13					6	1	EPOXY-BLACK	2.0		
1^8	OF MIDSHIP HOUSE	14					6	1	EPOXY-BLACK	1.5	10.0	
		15										
	UPPER BOOTTOP LINE TOPPED BY A	16					7	1	EPOXY-WHITE	3.5		
	WHITE BELT 6" PROJECTED HEIGHT	17										
		18										
	HULL ABOVE FWD PROJECTION OF TOP	19	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^7	MAIN DECK, BULWARK LINE (INSIDE & OUTSIDE)	20					7	1	EPOXY-WHITE	2.0		
		21					7	1	EPOXY-WHITE	1.5	10.0	
	INSIDE OF MAIN DECK BULWARK, FWD	22	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^7	OF MIDSHIP HOUSE, MAST, BOOMS, BOOM	23					8	1	EPOXY-BUFF	2.0		
1^8	STEPS & STOWAGE CRADLES, WINCH	24					8	1	EPOXY-BUFF	1.5	10.0	
	CONTROL PLATFS. (INSIDE & OUTSIDE), KING POSTS,	25										
	K.P. TRUSS, (EXCEPT TOP OF TRUSS), CONTAINER	26										
	SPREADERS, WIRE ROPE REELS, RIGGING	27										
	FITTINGS, PAD EYES, STAPLES, SWIVELS,	28										
	FAIRLEADS, SELF ADJUSTERS, EXTENDED	29										
	JAWS, MACH'Y FDNS, FOCSLE DECK	30										
	BREAKWATER (FWD & AFT SIDE) &	31										
	CONTAINER STOOLS.	32										
		33										
	FWD K.P. & TRUSS	34	14	1	ZINC CHROMATE	2.0	20	1	ALUM	1.5	3.5	
	(INTERIOR ONLY)	35										
		36										

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PAINT SCHEDULE

HULL NO 4650-51 — JOB NO 161-2 — SHEET 10

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	EXTERIOR	1										
	TOP OF HATCH COVERS	2	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
	HOLDS Nº 1 THRU 9	3					9	1	EPOXY-RED	4.0	10.5	
		4							NON-SKID			
		5										
1^9	SIDES OF HATCH COVERS	6	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^9	HOLDS Nº 1 THRU 9	7					5	1	EPOXY-RED	2.0		
1^{10}		8					5	1	EPOXY-RED	1.5	10.0	
	UNDERSIDE OF HATCH COVERS	9	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^9	HOLDS Nº 1, 2, 3, 4, 8 & 9 ONLY	10					5	1	EPOXY-RED	2.0		
1^{10}		11					5	1	EPOXY-RED	1.5	10.0	
	UNDERSIDE OF HATCH COVERS - REFRIG	12	34	1	CATHACOAT	3.0						
	HOLDS Nº 5, 5A, 5B, 5C, 6 & 7 ONLY	13										
		14										
1^9	HATCH COAMINGS - FOCSLE & MAIN DK	15	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^9	FWD OF MIDSHIP HOUSE	16					8	1	EPOXY-BUFF	2.0		
1^{10}		17					8	1	EPOXY-BUFF	1.5	10.0	
1^9	COCOONS & ATTACHED STEEL STRUCTS.	18	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^9	(SIDES & UNDERSIDE OF WALKWAYS ONLY)	19					7	1	EPOXY-WHITE	2.0		
1^{10}	ALSO THE OUT'BD COAMINGS	20					7	1	EPOXY-WHITE	1.5	10.0	
		21										
	TOP OF STEEL WALKWAYS AROUND	22	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
	COCOON	23					23	1	DEVRAN-RED	4.0	10.5	
		24							NON-SKID			
		25										
	HANDRAILS, STANCHIONS, DAVITS & STAFF	26	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
	FOCSLE DK & TOP OF COCOONS	27					7	1	EPOXY-WHITE	4.0	10.5	
		28										
1^9	FOCSLE END BHD & STEEL DOORS	29	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^9		30					7	1	EPOXY-WHITE	2.0	8.5	
		31										
1^9	BOOBY HATCH, VENT DUCTS, INT & EXT.	32	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^9	& PLENUMS	33					7	1	EPOXY-WHITE	2.0	8.5	
		34										
		35										
		36										

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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PAINT SCHEDULE

HULL NO 4650-51 | JOB NO 161-2 | SHEET 11

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	EXTERIOR	1										
	TOP OF BOOBY HATCH, K.P. TRUSS	2	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
	& DECK INSIDE OF WINCH PLATFORMS	3					23	1	DEVRAN-RED	4.0	10.5	
		4							NON - SKID			
		5										
	HANDRAILS & STANCHIONS (ALUM)	6	19	1	PRE-TREATMENT	.5	4	1	EPOXY - GRAY	4.0		
		7					7	1	EPOXY - WHITE	4.0	8.5	
		8										
	INCLINED LADDER TREADS & GRATING	9	19	1	PRE-TREATMENT	.5	4	1	EPOXY - GRAY	4.0		
	(ALUM)	10					5	1	EPOXY - RED	4.0	8.5	
		11										
	VERTICAL STEEL LADDERS - FWD	12	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
1"		13					8	1	EPOXY - BUFF	2.0		
1^{12}		14					8	1	EPOXY - BUFF	1.5	10.0	
1"	DECK MACHINERY, CHOCKS, BITTS & ETC	15			VENDOR APPLIED		4	1	EPOXY - GRAY	4.0		
	FWD & AFT OF MIDSHIP HOUSE	16					6	1	EPOXY - BLACK	2.0		
1^{12}		17					6	1	EPOXY - BLACK	1.5	10.0	
	PORTABLE CONTAINER GUIDES	18	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
1"	ABV. MAIN DECK - HOLDS Nº 8 & 9	19					7	1	EPOXY - WHITE	2.0		
1^{12}		20					7	1	EPOXY - WHITE	1.5	10.0	
18^3	PORTABLE CONTAINER GUIDES	21					32	1	FLUORESCENT YELLOW	2.0		
	ABV MAIN DECK - HOLDS Nº 8 & 9	22										
	(18" BELOW TOP OF GUIDE ONLY)	23										
		24										
	STEEL (HORZ) PIPING BETWEEN COCOONS & HATCH COAMING	25	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
1"	(FIREMAIN & ETC)	26					5	1	EPOXY - RED	2.0		
1^{12}		27					5	1	EPOXY - RED	1.5	10.0	
	STEEL (VERT) PIPING BETWEEN COCOONS & HATCH COAMING	28	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
1"	(INSIDE OF BELL ON ALL BALL CHK GOOSE NECK	29					7	1	EPOXY - WHITE	2.0		
1^{12}	VENTS)	30					7	1	EPOXY - WHITE	1.5	10.0	
		31										
	STEEL (VERT) PIPING INSIDE OF BULWARK	32	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
1"	FWD OF MIDSHIP HOUSE	33					8	1	EPOXY - BUFF	2.0		
1^{12}	(INSIDE OF BELL ON ALL BALL CHK GOOSE NECK	34					8	1	EPOXY - BUFF	1.5		
	VENTS)	35										
		36										

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PAINT SCHEDULE

HULL NO 4650-51 | JOB NO 161-1 & 2 | SHEET 12

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	EXTERIOR	1										
	MAIN & FOCSLE DECK	2	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
	(MAIN DECK. FWD OF MIDSHIP HOUSE)	3					9	1	EPOXY - RED	4.0	10.5	
		4							NON - SKID			
1^4	ANCHORS	5	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
1^3		6					6	1	EPOXY - BLACK	2.0		
1^4		7					6	1	EPOXY - BLACK	1.5	10.0	
3,7^3	DIELECTRIC SHIELD	8	22	2	COAL TAR	20.0						
	APPROX 20'-0" × 24'-0"	9			EPOXY							
	FOR LOCATIONS SEE ELEC DWG	10										
	E-4650-202-20-23	11										
		12										
	EXPOSED HOUSE SIDES, VERTICAL	13	30	1	DIMETCOTE	2.5	4	1	EPOXY - GRAY	4.0		
	BHDS, OVERHEADS - MIDSHIP HOUSE	14					7	1	EPOXY - WHITE	2.0	8.5	
	BULWARKS ON MAIN DK AFT OF	15										
	MIDSHIP HOUSE AND BULWARKS AND	16										
	FASHION PLTS ABOVE MAIN DECK,	17										
	UP TO AND INCLUDING BRIDGE DECK.	18										
	VENTILATORS, VENT DUCTS, INT & EXT,	19										
	DECK GEAR BOXES, LIFE PRESERVERS	20										
	LINE GUNS & ETC	21										
		22										
6^5	~~FALSE STACK (ALUM)~~	~~23~~	~~19~~	~~1~~	~~PRE-TREATMENT~~	~~.5~~	~~4~~	~~1~~	~~EPOXY - GRAY~~	~~3.5~~		
6^5	~~(EXTERIOR)~~	~~24~~					~~8~~	~~1~~	~~EPOXY - BUFF~~	~~4.0~~	~~8.0~~	
		25										
6^5	~~FALSE STACK (ALUM)~~	~~26~~	~~19~~	~~1~~	~~PRE-TREATMENT~~	~~.5~~	~~25~~	~~2~~	~~SEMI GLOSS WHITE~~	~~2.0~~	~~4.0~~	
6^5	~~(INTERIOR)~~	~~27~~	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						
		28										
6^6	BAND ON K.P. STACKS, ~~FALSE STACK,~~	29					6	1	EPOXY - BLACK	3.5		
	~~ALSO TOP FALSE STACK &~~ APPROX	30										
	16'-0" OF END OF THE 70 TON BOOM	31										
		32										
6^5	~~INSIGNIA ON FALSE STACK~~	~~33~~					~~3~~	~~1~~	~~EPOXY - RED~~	~~3.5~~		
6^5		~~34~~					~~7~~	~~1~~	~~EPOXY - WHITE~~	~~3.5~~		
6^5		~~35~~						~~1~~	~~EPOXY - BLUE~~	~~3.5~~	~~10.5~~	
		36										

AUTOMATION INDUSTRIES, INC.
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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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PAINT SCHEDULE

HULL NO 4650-51 JOB NO 161-2 SHEET 13

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	EXTERIOR	1										
	RADAR MAST, ATTACHED PLATFS	2	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
3^{8}	& BINNACLE PLATF (PLATF SIDE	3					8	1	EPOXY-BUFF	2.0		
$1,^{16}3^{8}$	& UNDER SIDE ONLY)	4					8	1	EPOXY-BUFF	1.5	10.0	
		5										
	HANDRAILS & STANCHIONS ON	6	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
3^{8}	RADAR MAST & BINNACLE PLATFORMS	7					8	1	EPOXY-BUFF	2.0		
$1,^{16}3^{8}$		8					8	1	EPOXY-BUFF	1.5	10.0	
	RADAR MAST PLATFORMS & BINNACLE	9	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^{15}	PLATFORM DECK & STEPS	10					9	1	EPOXY-RED	4.0	10.5	
		11							NON-SKID			
		12										
$1,^{15}3^{9}$	AFT K.P. STACK, K.P. TRUSS, MAST, BOOM,	13	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
$1,^{15}3^{9}$	BOOM STOW, BOOM PEDESTAL & STEP, K.P. &	14					8	1	EPOXY-BUFF	2.0		
$1,^{16}3^{9}$	MAST PLATFS SIDES & UNDERSIDE ONLY	15					8	1	EPOXY-BUFF	1.5	10.0	
		16										
3^{9}	CONTAINER GUIDES, CONTAINER GUIDE STOOLS,	17	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
3^{9}	AFT DECK HOUSE, STEEL DOORS, AWNING	18					7	1	EPOXY-WHITE	2.0		
3^{9}	STANCHIONS, DAVITS, JACK & ENSIGN STAFFS	19					7	1	EPOXY-WHITE	1.5	10.0	
		20										
		21										
	AFT TRUSS & MAST	22	14	1	ZINC CHROMATE	2.0	20	1	ALUM	1.5	3.5	
	(INTERIOR ONLY)	23										
		24										
	AFT K.P. STACK	25	10	1	MOBILZINC	3.0						
	(INTERIOR ONLY)	26										
		27										
	HANDRAILS & STANCHIONS, VERTICAL	28	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
3^{8}	LADDERS TO K.P. & MAST PLATFS	29					8	1	EPOXY-BUFF	2.0		
3^{8}		30					8	1	EPOXY-BUFF	1.5	10.0	
1^{16}	K.P. & MAST PLATFORM DECKS	31	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
$1,^{15}3^{10}$	& TOP OF K.P. TRUSS	32					9	1	EPOXY-RED	4.0	10.5	
		33							NON-SKID			
		34										
		35										
		36										

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PAINT SCHEDULE

HULL NO 4650-51 JOB NO 161-2 SHEET 14

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	EXTERIOR	1										
	HANDRAILS & STANCHIONS ON MAIN	2	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
	DECK & ABOVE	3					7	1	EPOXY-WHITE	2.0		
1^{18}		4					7	1	EPOXY-WHITE	1.5	10.0	
1^{17}	INCLINED LADDERS & HANDRAIL (ALUM)	5	19	1	PRE-TREATMT	.5	4	1	EPOXY-GRAY	4.0		
1^{17}	MAIN DK & ABOVE	6					7	1	EPOXY-WHITE	2.0		
1^{18}		7					7	1	EPOXY-WHITE	1.5	8.0	
	MAIN DECK, TOP OF AFT DK HOUSE	8	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
$1^{15,16}3,22^{11}$	TOP OF WHEELHOUSE	9					9	1	EPOXY-RED	4.0	10.5	
3^{11}		10							NON-SKID			
		11										
10^{1}	SUPERSTRUCTURE DECK	12	30	1	DIMETCOTE	2.5						DECK COVERING
		13										BY OUTSIDE CONTRACTOR
		14										
3^{12}	HATCH COAMINGS, ROPE SCUTTLE	15	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
$1,^{17}3^{12}$	COAMINGS, PUMP TRUNK SIDES &	16					7	1	EPOXY-WHITE	2.0		
$1,^{18}3^{12}$	COAMINGS EXTENDING ABV COVE BASE	17					7	1	EPOXY-WHITE	1.5	10.0	
		18										
	STEEL VENT & OVERFLOW PIPING	19	30	1	DIMETCOTE	2.5	4	1	EPOXY-GRAY	4.0		
1^{17}	AFT MIDSHIP HOUSE	20					7	1	EPOXY-WHITE	2.0		
1^{18}		21					7	1	EPOXY-WHITE	1.5	10.0	
	OUTSIDE OF INNER SMOKE STACK	22					13	2	ALUM HEAT RESISTANT	3.0		
		23										
23^{9}	KEEL TO LOWER BOOTTOP INCLUDING	24	40	1	SILVER PRIMOCON	2.5	42	1	ANTI-FOULING	2.0		NOTE:
23^{9}	RUDDER & APPURTENANCES BEFORE	25	41	1	SILVER PRIMOCON HB	4.0					8.5	LINES 24, 25, 28, 30, 31'
23^{9}	LAUNCHING	26										33 & 34 APPLIES TO
23^{9}		27										H4650 ONLY.
23^{9}	TURN OF BILGE TO LOWER BOOTTOP	28					42	1	ANTI-FOULING	2.0	10.5	
		29										
23^{9}	BOW THRUSTER TUNNEL	30	44	2	GLASS FLAKE EPOXY	25.0	42	2	ANTI-FOULING	4.0	32.0	SEE GEN. NOTE № 16 FOR
23^{9}		31	43	1	VITAR	3.0						OVERCOATING GLASS FLAKE.
		32										
23^{9}	SEA CHEST	33	44	2	GLASS FLAKE EPOXY	25.0	42	2	ANTI-FOULING	4.0	32.0	SEE GEN. NOTE № 16 FOR
23^{9}		34	43	1	VITAR	3.0						OVERCOATING GLASS FLAKE.
		35										
		36										

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PAINT SCHEDULE

HULL NO 4650-51

JOB NO 161-5

SHEET 15

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR TANKS	1										
		2										
	FWD & AFT PEAK TANKS	3					11	1	EPOXY-GRAY	5.0		
		4					12	1	EPOXY-WHITE	5.0	10.0	
		5										
	BALLAST TANKS	6										
	D.B. TANK Nº 1 & 2 P/S, Nº 3 ℄ & P/S,	7					11	1	EPOXY-GRAY	5.0		
	Nº 4 INB'D P/S & OUTB'D P/S, Nº 5	8					12	1	EPOXY-WHITE	5.0	10.0	
	INB'D P/S & OUT'BD P/S, Nº 5A INB'D P/S	9										
	& OUT'BD P/S, Nº 5B INBD P/S & OUT'BD	10										
	P/S, Nº 5C INB'D P/S & OUTBD P/S,	11										
	Nº 6 INB'D P/S & OUT'BD P/S, Nº 7 INBD P/S	12										
	& OUT'BD P/S, Nº 8 ℄ & Nº 8 P/S	13										
		14										
	HEELING TANK Nº 10C P/S & Nº 10D	15					11	1	EPOXY-GRAY	5.0		
	P/S & DEEP TANK Nº 17 P/S	16					12	1	EPOXY-WHITE	5.0	10.0	
		17										
	FUEL OIL TANKS	18							NONE			
	DEEP TANK Nº 1 P/S, Nº 2 P/S, Nº 3 P/S,	19										
	Nº 4 P/S, Nº 5 P/S, Nº 6 P/S, Nº 7 P/S, Nº 8	20										
	P/S, Nº 9 P/S, Nº 10 P/S, Nº 10A P/S,	21										
	Nº 10B P/S, Nº 12 P/S, Nº 13 P/S, Nº 14 P/S,	22										
	Nº 15 P/S, Nº 16 P/S LOWER SERVICE	23										
	SETTLING TKS, Nº 16 UPPER SERVICE	24										
	SETTLING TKS. DIESEL OIL TANKS.	25										
	Nº 11 P/S, & D.O. DBL. BOTT, FRS 176-184	26										
	P/S.	27										
		28										
	FRESH WATER TANKS	29										
	ANTI-ROLL UPPER & LOWER TANK &	30					11	1	EPOXY-GRAY	5.0		
	DUCT, STABILIZER DUMP TANKS	31					12	1	EPOXY-WHITE	5.0	10.0	
	P/S, DISTILLED WATER TANKS P/S,	32										
	BOILER FEED WATER TKS, GARBAGE	33										
6²	TANK, SUMPS & CHEMICAL MIXING TANK.	34										
		35										
		36										

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PAINT SCHEDULE

HULL NO 4650-51

JOB NO 161-5

SHEET 16

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR TANKS	1										
		2										
	POTABLE WATER TANKS	3					16	1	BLUE	4.0		
		4					17	1	WHITE	4.0	8.0	
		5										
	COFFERDAMS, VOIDS, CHAIN	6	10	1	MOBILZINC	2.5						
	LOCKER & CHAIN LOCKER SUMP	7										
		8										
	GARBAGE CHUTE & HOPPER	9	29	1	PHILLY-CLAD	8.0						
		10										
	PIPE TUNNEL - VERTICAL & HORIZONTAL	11	10	1	MOBILZINC	2.5						
	SURFACES	12										
		13										
1¹³	INTERIOR OF CARGO OIL TKS #1, 2 & 3	14										COATING BY
		15										OUTSIDE CONTRACTOR
		16										
		17										
		18										
		19										
		20										
		21										
		22										
		23										
		24										
		25										
		26										
		27										
		28										
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

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BUILDERS PLAN NO. H-4650-161-00-01

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

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PAINT SCHEDULE

HULL NO 4650-51

JOB NO 161- 5

SHEET 17

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	CONTAINER HOLD №1	2										
2^2	FROM TOP OF HATCH COAMINGS TO MAIN DECK.	3										
2^2	BHDS, SHELL, WEBS & STANS ABV 18" ABV DK.	4					4	1	EPOXY - GRAY	3.5		
2^2	HATCH COAMINGS, UNDERSIDE OF FOCSLE DK, HAND	5					7	1	EPOXY - WHITE	3.5	7.0	
2^2	RAILS PORT & STA STANS, TRANS & ℄ LONG'L BOX	6										
2^2	GRDS & CONTAINER GUIDES & BRKTS.	7										
2^2		8										
		9										
	BHDS. SHELL, WEBS, & ATTACHED	10					4	1	EPOXY - GRAY	3.5		
	STRUCTURE TO 18" ABOVE DK	11					5	1	EPOXY - RED	3.5	7.0	
		12										
3^{13}	TRANS & LONG'L WALKWAYS	13					4	1	EPOXY - GRAY	3.5		
1^{20}		14					9	1	EPOXY - RED	6.5	10.0	
		15							NON - SKID			
		16										RUST PREVENTIVE
1^{21}	INTERIOR OF BOX GIRDERS	17	33	-	MAGNAKOTE	-						SPRAY APPLIED OR
		18										FILL & DRAIN AS
		19										NECESSARY
		20										
		21										
18^3-22^3	CONTAINER GUIDES	22					38	1	FLUORESCENT YELLOW	2.0		
	(18" BELOW TOP OF GUIDES ONLY)	23										
		24										
	CONTAINER HOLD № 1	25										
	BETWEEN 2ND DK & TANK TOP	26										
	BHDS ABOVE 18" ABOVE DECK, UNDERSIDE	27					4	1	EPOXY - GRAY	3.5		
	OF 2ND DK, ATTACHED STRUCTURES	28					7	1	EPOXY - WHITE	3.5	7.0	
	& CONTAINER GUIDES & BRKTS.	29										
		30										
	DECK BETWEEN FRS. 26 TO 36	31					4	1	EPOXY - GRAY	3.5		
$3^{11}5^{1}$		32					9	1	EPOXY - RED	6.5	10.0	
		33							NON - SKID			
	BHDS BETWEEN FRS 26 TO 45	34					4	1	EPOXY - GRAY	3.5		
3^{15}	TO 18" ABV DK	35					5	1	EPOXY - RED	3.5	7.0	
		36										

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PAINT SCHEDULE

HULL NO 4650-51

JOB NO 161- 5

SHEET 18

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	CONTAINER HOLD №1	2										
	BET. 2ND DK. & TANK TOP (CONT'D.)	3										
3^{16}	TRANS & LONG'L WALKWAYS BET FRS 36 TO 45	4					4	1	EPOXY - GRAY	3.5		
1^{22}		5					9	1	EPOXY - RED	6.5	10.0	
		6							NON - SKID			
		7										
	2ND DK PASSAGEWAY BET FRS 26 TO 45 P/S	8										
	BHDS, WEBS, SHELL & ATTACHED STRUCTURES	9					4	1	EPOXY - GRAY	3.5		
	ABOVE 18" ABOVE DECK, UNDERSIDE	10					7	1	EPOXY - WHITE	3.5	7.0	
	OF MAIN DK, STEEL DOORS & ETC	11										
		12										
	BHDS, WEBS, SHELL & ATTACHED STRUCTURES	13					4	1	EPOXY - GRAY	3.5		
	TO 18" ABV DK, MISC FLATS & TANK TOP	14					5	1	EPOXY - RED	3.5	7.0	
		15										
3^{16}	LONG'L WALKWAY	16					4	1	EPOXY - GRAY	3.5		
1^{22}		17					9	1	EPOXY - RED	6.5	10.0	
		18							NON - SKID			
		19										
	INCLINED LADDERS & HANDRAILS	20					4	1	EPOXY - GRAY	3.5		
		21					7	1	EPOXY - WHITE	3.5	7.0	
		22										
	LADDER TREADS	23					4	1	EPOXY - GRAY	3.5		
		24					9	1	EPOXY - RED	4.0	7.5	
		25							NON - SKID			
		26										
$18^2 22^2$	TWEEN DECKS - PAINT STRIPE 3" WIDE	27					38	1	FLUORESCENT YELLOW	2.0		
	INNERMOST EDGE, 36" FROM HATCH	28										
	COAMING	29										
		30										
5^2	MISC. FLATS, 37'-8", 29'-8" & 13'-8"	31					4	1	EPOXY - GRAY	3.5		
	BET FRS. 26-45 P/S	32					9	1	EPOXY - RED	6.5	10.0	
		33							NON - SKID			
5^3	TANK TOP	34					4	1	EPOXY - GRAY	3.5		
5^3		35					5	1	EPOXY - RED	3.5	7.0	
		36										

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VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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AUTOMATION INDUSTRIES, INC.
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BUILDERS PLAN NO. H-4650-161-00-01

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HULL NO 4650-51 PAINT SCHEDULE JOB NO 161-5 SHEET 19

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR OF CONTAINER HOLDS	1										
	CONTAINER HOLD Nº 2	2										
2^{3}	FROM TOP OF HATCH COAMINGS TO TANK TOP	3										
2^{3}	BHDS & ATTACHED STRUCTS ABV 18" ABV	4					4	1	EPOXY - GRAY	3.5		
2^{3}	DECK. HATCH COAMINGS, UNDERSIDE OF	5					7	1	EPOXY - WHITE	3.5	7.0	
	MAIN DK. HAND RAILS & STANS, TRANS	6										
	& ℄ LONG'L BOX GIRDERS, CONTAINER	7										
	GUIDES & BRKTS & STEEL DOORS	8										
		9										
1^{24}	INTERIOR OF BOX GIRDERS	10	33	-	MAGNAKOTE	-						RUST PREVENTIVE
		11										SPRAY APPLIED OR
		12										FILL & DRAIN AS
		13										NECESSARY
		14										
$18^{3}22^{2}$	CONTAINER GUIDES	15					38	1	FLUORESCENT YELLOW	2.0		
	(18" BELOW TOP OF GUIDES ONLY)	16										
		17										
	BHDS & ATTACHED STRUCTURES TO	18					4	1	EPOXY - GRAY	3.5		
	18" ABV DECK, MISC FLATS & TANK TOP	19					5	1	EPOXY - RED	3.5	7.0	
		20										
3^{17}	TRANS & LONG'L WALKWAYS	21					4	1	EPOXY - GRAY	3.5		
1^{23}		22					9	1	EPOXY - RED	6.5	10.0	
		23							NON - SKID			
		24										
	2ND DECK PASSAGEWAY - BET FRS 45 TO 61 P/S	25										
	BHDS, WEBS, SHELL, ATTACHED STRUCTURES	26					4	1	EPOXY - GRAY	3.5		
	ABOVE 18" ABOVE DECK, HANDRAILS,	27					7	1	EPOXY - WHITE	3.5	7.0	
	UNDERSIDE OF MAIN DK, STEEL DOORS &	28										
	ETC.	29										
		30										
	BHDS, SHELL & ATTACHED STRUCTURES	31					4	1	EPOXY - GRAY	3.5		
	TO 18" ABOVE DECK	32					5	1	EPOXY - RED	3.5	7.0	
		33										
3^{17}	LONG'L WALKWAY	34					4	1	EPOXY - GRAY	3.5		
1^{23}		35					9	1	EPOXY - RED	6.5	10.0	
		36							NON - SKID			

HULL NO 4650-51 PAINT SCHEDULE JOB NO 161-5 SHEET 20

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIORS OF CONTAINER HOLDS	1										
	CONTAINER HOLD Nº 2 (CONT'D)	2										
	MISC. FLATS - 29'-8", 21'-8" & 13'-8"	3					4	1	EPOXY - GRAY	3.5		
5^{4}		4					9	1	EPOXY - RED NON - SKID	6.5	10.0	
5^{5}	TANK TOP	5					4	1	EPOXY - GRAY	3.5		
5^{6}		6					5	1	EPOXY - RED	3.5	7.0	
5^{7}	INCLINED LADDERS & HANDRAILS	7					4	1	EPOXY - GRAY	3.5		
5^{8}		8					7	1	EPOXY - WHITE	3.5	7.0	
	INCLINED LADDER TREADS	9					4	1	EPOXY - GRAY	3.5		
1^{25}		10					9.	1	EPOXY - RED	6.5	10.0	
		11							NON - SKID			
		12										
$18^{2}22^{8}$	~~TWEEN DECKS - PAINT STRIPE 3"~~	13					~~38~~	~~1~~	~~FLUORESCENT YELLOW~~	~~2.0~~		
	~~WIDE, INNERMOST EDGE, 36" FROM~~	14										
	~~HATCH COAMING~~	15										
		16										
	CONTAINER HOLD Nº 3	17										
2^{4}	FROM TOP OF HATCH COAMINGS TO TANK TOP	18										
2^{4}	BHDS & ATTACHED STRUCTURES ABV 18"	19					4	1	EPOXY - GRAY	3.5		
2^{4}	ABV DK, HATCH COAMINGS, UNDERSIDE	20					7	1	EPOXY - WHITE	3.5	7.0	
2^{4}	OF MAIN DECK, TRANS & ℄ LONG'L	21										
	BOX GIRDERS, HANDRAILS & STANCHIONS,	22										
	CONTAINER GUIDES & BRKTS &	23										
	STEEL DOORS.	24										
		25										
1^{26}	INTERIOR OF BOX GIRDERS	26	33	-	MAGNAKOTE	-						RUST PREVENTIVE
		27										SPRAY APPLIED OR
		28										FILL & DRAIN AS
		29										NECESSARY
		30										
$18^{3}22^{7}$	CONTAINER GUIDES	31					38	1	FLUORESCENT YELLOW	2.0		
	(18" BELOW TOP OF GUIDES ONLY)	32										
		33										
	BHD & ATTACHED STRUCTURES TO	34					4	1	EPOXY - GRAY	3.5		
	18" ABOVE DECK	35					5	1	EPOXY - RED.	3.5	7.0	
		36										

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VITRO LABORATORIES DIVISION
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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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PAINT SCHEDULE

HULL NO 4650-51 JOB NO 161-5 SHEET 21

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	CONTAINER HOLD Nº 3 (CONT'D)	2										
		3					4	1	EPOXY - GRAY	3.5		
3^{18}	TRANS WALKWAY	4					9	1	EPOXY - RED	6.5	10.0	
1^{27}		5							NON - SKID			
		6										
	2ND DK PASS BET FRS 61 TO 77 P/S	7										
	BHDS, SHELL, ATTACHED STRUCTURES,	8					4	1	EPOXY - GRAY	3.5		
	ABOVE 18" ABOVE DECK, UNDERSIDE	9					7	1	EPOXY - WHITE	3.5	7.0	
	OF MAIN DK, HANDRAILS & STEEL	10										
	DOORS	11										
		12										
	BHDS, SHELL & ATTACHED STRUCTURE TO	13					4	1	EPOXY - GRAY	3.5		
	18" ABV DECK, MISC FLATS & TANK TOP	14					5	1	EPOXY - RED	3.5	7.0	
		15										
3^{18}	LONG'L WALKWAY	16					4	1	EPOXY - GRAY	3.5		
1^{27}		17					9	1	EPOXY - RED	6.5	10.0	
		18							NON - SKID			
		19										
	MISC FLATS - 37'-8", 21'-8" & 13'-8"	20					4	1	EPOXY - GRAY	3.5		
5^{9}		21					9	1	EPOXY - RED NON - SKID	6.5	10.0	
5^{10}	TANK TOP	22					4	1	EPOXY - GRAY	3.5		
5^{11}		23					5	1	EPOXY - RED	3.5	7.0	
5^{12}	INCLINED LADDERS & HANDRAILS	24					4	1	EPOXY - GRAY	3.5		
5^{13}		25					7	1	EPOXY - WHITE	3.5	7.0	
	INCLINED LADDER TREADS	26					4	1	EPOXY - GRAY	3.5		
1^{27}		27					9	1	EPOXY - RED	6.5	10.0	
		28							NON - SKID			
		29										
	CONTAINER HOLD Nº 4	30										
2^{5}	FROM TOP OF HATCH COAMINGS TO TANK TOP.	31										
2^{5}	BHDS & ATTACHED STRUCTURES ABV 18"	32					4	1	EPOXY - GRAY	3.5		
2^{5}	ABV DK, HATCH COAMINGS, UNDERSIDE OF	33					7	1	EPOXY - WHITE	3.5	7.0	
2^{5}	MAIN DK, TRANS & ℄ LONG'L BOX GDRS, HAND	34										
	RAIL & STANCHIONS, CONTAINER GUIDES &	35										
	BRKTS, & STEEL DOORS	36										

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PAINT SCHEDULE

HULL NO 4650-51 JOB NO 161-5 SHEET 22

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	CONTAINER HOLD Nº 4 (CONT'D)	2										
2^{6}	FROM TOP OF HATCH COAMINGS TO TANK TOP	3										
1^{28}	INTERIOR OF BOX GIRDER	4	33	-	MAGNAKOTE	-						RUST PREV SPRAY APPLIED OR
		5										FILL & DRAIN AS NECESSARY
1^{29}	INTERIOR OF ℄ BOX GIRDER APPROX	6										TO BE FILLED WITH FOAM TYPE
1^{29}	7'-0" FROM FWD SIDE OF TRANS BHD #93	7										INSUL. BY OUTSIDE CONTRACTOR
		8										
18' 22	CONTAINER GUIDES	9					38	1	FLUORESCENT YELLOW	2.0		
	(18" BELOW TOP OF GUIDES ONLY)	10										
		11										
	BHD & ATTACHED STRUCTURES TO	12					4	1	EPOXY - GRAY	3.5		
	18" ABOVE DECK	13					5	1	EPOXY - RED	3.5	7.0	
		14										
3^{19}	TRANS WALKWAY	15					4	1	EPOXY - GRAY	3.5		
1^{30}		16					9	1	EPOXY - RED NON - SKID	6.5	10.0	
20' 21'	FWD SIDE OF BHD 93, FROM 8'-2" ABV T.T.	17	34	1	CATHACOAT	2.5	4	1	EPOXY - GRAY	3.5	9.5	
20' 21'	TO 26'-4" OFF ℄, P/S (ONLY)	18					7	1	EPOXY - WHITE	3.5		
	2ND DK PASS BET FRS 77 TO 93 P/S	19										
	BHDS, SHELL, & ATTACHED STRUCTURES ABOVE	20					4	1	EPOXY - GRAY	3.5		
	18" ABOVE DECK, UNDERSIDE OF MAIN	21					7	1	EPOXY - WHITE	3.5	7.0	
	DK, HANDRAILS & STEEL DOORS	22										
		23										
	BHDS, SHELL & ATTACHED STRUCTURES TO	24					4	1	EPOXY - GRAY	3.5		
	18" ABV DECK, MISC FLATS & TANK TOP	25					5	1	EPOXY - RED	3.5	7.0	
		26										
3^{19}	LONG'L WALKWAY	27					4	1	EPOXY - GRAY	3.5		
1^{30}		28					9	1	EPOXY - RED	6.5	10.0	
		29							NON - SKID			
		30										
	MISC FLAT - 13'-8" ABV ℄	31					4	1	EPOXY - GRAY	3.5		
5^{14}		32					9	1	EPOXY - RED NON - SKID	6.5	10.0	
5^{15}	TANK TOP	33					4	1	EPOXY - GRAY	3.5		
5^{16}		34					5	1	EPOXY - RED	3.5	7.0	
5^{17}	INCLINED LADDERS & HANDRAIL	35					4	1	EPOXY - GRAY	3.5		
5^{18}		36					7	1	EPOXY - WHITE	3.5	7.0	

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PAINT SCHEDULE

HULL NO 4650-51 JOB NO 161-5 SHEET 23

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER. HOLDS	1										
	CONTAINER HOLD Nº 4 (CONT'D)	2										
	INCLINED LADDER TREADS	3					4	1	EPOXY-GRAY	3.5		
1^{31}		4					9	1	EPOXY-RED	6.5	10.0	
		5							NON-SKID			
	CONTAINER HOLD Nº 8	6										
2^7	FROM TOP OF HATCH COAMINGS TO TANK TOP	7										
2^7	BHDS, SHELL & ATTACHED STRUCTURES, ABV 18"	8					4	1	EPOXY-GRAY	3.5		
2^7	ABV DK, HATCH COAMINGS, UNDERSIDE OF MN.	9					7	1	EPOXY-WHITE	3.5	7.0	
2^7	DK, TRANS & ℄ LONG'L BOX GIRDERS,	10										
	HANDRAIL & STANCHIONS, CONTAINER	11										
	GUIDES & BRACKETS & STEEL DOORS	12										
		13										
	AFT SIDE OF TRANS BHD 141 ONLY	14	34	1	CATHACOAT	2.5						
		15										
1^{32}	INTERIOR OF BOX GIRDERS	16	33	-	MAGNAKOTE	-						RUST PREV. SPRAY APPLIED OR
		17										FILL & DRAIN, AS NECESSARY
1^{33}	INTERIOR OF ℄ LONG'L GIRDER APPROX	18										TO BE FILLED WITH FOAM TYPE
1^{33}	4'-0" FROM AFT SIDE OF TRANS BHD#141	19										INSUL BY OUTSIDE CONTRACTOR
		20										
$18^3 22^3$	CONTAINER GUIDES	21					38	1	FLUORESCENT YELLOW	2.0		
	(18" BELOW TOP OF GUIDES ONLY)	22										
		23										
	BHD, SHELL & ATTACHED STRUCTURES	24					4	1	EPOXY-GRAY	3.5		
	AT 18" ABOVE MISC FLATS, DECK &	25					5	1	EPOXY-RED	3.5	7.0	
	TANK TOP	26										
		27										
3^{20}	TRANS WALKWAY	28					4	1	EPOXY-GRAY	3.5		
1^{31}		29					9	1	EPOXY-RED	6.5	10.0	
		30							NON-SKID			
		31										
	2ND DK PASS BET FRS 141 TO 157 P/S	32										
	BHDS, SHELL & ATTACHED STRUCTURES	33					4	1	EPOXY-GRAY	3.5		
	ABOVE 18" ABOVE DECK, UNDERSIDE	34					7	1	EPOXY-WHITE	3.5	7.0	
	OF MAIN DK, HANDRAILS & STEEL	35										
	DOORS	36										

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PAINT SCHEDULE

HULL NO 4650-51 JOB NO 161-5 SHEET 24

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	CONTAINER HOLD Nº 8 (CONT'D)	2										
		3										
	PASSAGEWAY BHDS, SHELL & ATTACHED	4					4	1	EPOXY-GRAY	3.5		
	STRUCTURES TO 18" ABV DECK	5					5	1	EPOXY-RED	3.5	7.0	
		6										
3^{21}	LONG'L WALKWAY	7					4	1	EPOXY-GRAY	3.5		
1^{34}		8					9	1	EPOXY-RED NON-SKID	6.5	10.0	
14^3	MISC FLAT 13'-8" ABV ℔ - FROM 2'-0" FWD	9	34	1	CATHCOAT	3.0						MAX. 1" FOAM TYPE OF INSUL.
14^3	FR. 149 TO 2'-0" AFT FR 153	10										BY OUTSIDE CONTRACTOR
14^4	MISC FLAT 13'-8" ABV ℔ - FROM BHD 141	11					4	1	EPOXY-GRAY	3.5		
$5^{13/14}$	TO 2'-0" FWD FR 149 - FROM 2'-0" AFT 153 TO 157	12					9	1	EPOXY-RED NON-SKID	6.5	10.0	
5^{20}	TANK TOP	13					4	1	EPOXY-GRAY	3.5		
5^{21}		14					5	1	EPOXY-RED	3.5	7.0	
5^{22}	INCLINED LADDERS & HANDRAIL	15					4	1	EPOXY-GRAY	3.5		
5^{23}		16					7	1	EPOXY-WHITE	3.5	7.0	
	INCLINED LADDER TREADS	17					4	1	EPOXY-GRAY	3.5		
1^{34}		18					9	1	EPOXY-RED	6.5	10.0	
		19							NON-SKID			
	PASSAGEWAY - FRS 158 TO 159 PORT	20										
	SIDE ONLY - FROM HOLD Nº 8 TO	21										
	MAIN DECK	22										
	BHDS & ATTACHED STRUCTURES ABOVE	23					4	1	EPOXY-GRAY	3.5		
	18" ABOVE DECK	24					7	1	EPOXY-WHITE	3.5	7.0	
		25										
	BHDS AT 18" ABOVE DECK	26					4	1	EPOXY-GRAY	3.5		
		27					5	1	EPOXY-RED	3.5	7.0	
		28										
	DECK IN PASSAGEWAY	29					4	1	EPOXY-GRAY	3.5		
1^{36}		30					9	1	EPOXY-RED	6.5	10.0	
		31							NON-SKID			
		32										
	INCLINED LADDERS & HANDRAIL	33					4	1	EPOXY-GRAY	3.5		
		34					7	1	EPOXY-WHITE	3.5	7.0	
		35										
		36										

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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-5

SHEET 25

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	CONTAINER HOLD Nº 8 (CONT'D)	2										
	INCLINED LADDER TREADS	3					4	1	EPOXY - GRAY	3.5		
1^{35}		4					9	1	EPOXY - RED NON - SKID	6.5	10.0	
14^{5}	PIPE CHASE - FROM 31'-0" ABV ℄ TO 35'-0" ABV ℄	5	34	1	CATHCOAT	3.0						FILL WITH FOAM BY
14^{5}	BETWEEN FRS 141 TO 155-P/S	6										OUTSIDE CONTRACTOR
	CARGO HOLD Nº 9	7										
2^{8}	FROM TOP OF HATCH COAMINGS TO 2ND DECK	8										
2^{8}	FRS 157 TO 236	9										
2^{8}	UNITIZED CARGO & F.O. FILLING STATIONS	10										
2^{8}	BHDS, SHELL, PUMP TRUNK & SHAFT ALLEY	11					4	1	EPOXY - GRAY	3.5		
2^{8}	TRUNK BHDS & ATTACHED STRUCTURES ABV	12					7	1	EPOXY - WHITE	3.5	7.0	
2^{8}	18" ABV DK, HATCH COAMINGS, UNDERSIDE	13										
2^{8}	OF MAIN DK, ℄ LONG'L BOX GIRDERS,	14										
2^{8}	HINGED SIDE PORTS & STEEL DOORS.	15										
		16										
	BHDS, SHELL, PUMP TRUNK & SHAFT ALLEY	17					4	1	EPOXY - GRAY	3.5		
	TRUNK BHDS, ATTACHED STRUCTURES,	18					5	1	EPOXY - RED	3.5	7.0	
2^{8}	ACCESS HATCH COVER, SCUTTLE, GARBAGE	19										
	CHUTE, VERT VENT DUCTS AT 18" ABOVE	20										
	DECK	21										
		22										
2^{8}	DECK & TOP OF LARGE CARGO HATCH COVERS	23					4	1	EPOXY - GRAY	3.5		
		24					23	1	DEVRAN - RED	16.0	19.5	
		25							NON - SKID			
		26										
	VENT DUCTS	27					4	1	EPOXY - GRAY	3.5		
		28					7	1	EPOXY - WHITE	3.5	7.0	
		29										
	GARBAGE CHUTE	30					4	1	EPOXY - GRAY	3.5		
	(EXTERIOR ONLY)	31					7	1	EPOXY - WHITE	3.5	7.0	
		32										
1^{36}	INTERIOR OF BOX GIRDERS	33	33	-	MAGNAKOTE	-						RUST PREVENTIVE
		34										SPRAY APPLIED OR
		35										FILL & DRAIN AS
		36										NECESSARY

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-5

SHEET 26

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	CARGO HOLD Nº 9 (CONT'D)	2										
	FREON STOWAGE & FAN ROOM,	3										
	ELECTRICAL WORKSHOP & STORES,	4										
	CO₂ ROOM & PASSAGEWAY,	5										
	BAGGAGE LOCKER & STORES LOADING	6										
	CORRIDOR	7										
1^{37}	BHDS, SHELL, OVERHEAD, STEE DOORS	8	18	1	EPOXY - YELLOW	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	& ATTACHED STRUCTURES	9							ENAMEL - WHITE			
		10										
	DECK	11	18	1	EPOXY - YELLOW	1.5	5	1	EPOXY - RED	2.5		
1^{37}		12					9	1	EPOXY - RED	6.0	10.0	
		13							NON - SKID			
		14										
	VENT DUCTS	15	18	1	EPOXY - YELLOW	1.5	25	2	SEMI - GLOSS	2.5	4.0	
		16							ENAMEL - WHITE			
		17										
	INCLINED LADDER & HANDRAIL	18					4	1	EPOXY - GRAY	3.5		
		19					7	1	EPOXY - WHITE	3.5	7.0	
		20										
	INCLINED LADDER TREADS	21					4	1	EPOXY - GRAY	3.5		
1^{37}		22					9	1	EPOXY - RED	6.5	10.0	
		23							NON - SKID			
		24										
	CARGO HOLD Nº 9	25										
	BETWEEN 2ND DK & 20'-0" FLAT	26										
	BHDS, SHELL, WEBS & ATTACHED	27					4	1	EPOXY - GRAY	3.5		
	STRUCTURES ABOVE 18" ABOVE	28					7	1	EPOXY - WHITE	3.5	7.0	
	DECK, UNDERSIDE OF 2ND DK &	29										
	3RD DK, LONG'L BOX GIRDERS, PORTABLE PLATFS,	30										
	PEDESTALS & UNDERSIDE OF HATCH	31										
	COVERS	32										
		33										
	BHDS, SHELL, WEBS & ATTACHED	34					4	1	EPOXY - GRAY	3.5		
	STRUCTURES TO 18" ABOVE DECK	35					5	1	EPOXY - RED	3.5	7.0	
		36										

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PAINT SCHEDULE

HULL NO 4650-51 JOB NO 161-5 SHEET 27

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	CARGO HOLD Nº 9 (CONT'D)	2										
	DECK & TOP OF HATCH COVERS	3					4	1	EPOXY-GRAY	3.5		
		4					23	1	DEVRAN-RED	16.0	19.5	
		5							NON-SKID			
		6										
	VENT DUCTS	7					4	1	EPOXY-GRAY	3.5		
		8					7	1	EPOXY-WHITE	3.5	7.0	
		9										
	INCLINED LADDERS & HANDRAILS	10					4	1	EPOXY-GRAY	3.5		
		11					7	1	EPOXY-WHITE	3.5	7.0	
		12										
	INCLINED LADDER TREADS	13					4	1	EPOXY-GRAY	3.5		
1^{3B}		14					9	1	EPOXY-RED	6.5	10.0	
		15							NON-SKID			
		16										
	WALKWAY - 3RD DK - PORT SIDE ONLY	17					4	1	EPOXY-GRAY	3.5		
	SUPPORT FRAMING, HANDRAILS &	18					7	1	EPOXY-WHITE	3.5	7.0	
	STANCHIONS	19										
		20										
10^{2}	~~WALKWAY DECK~~	21					~~4~~	~~1~~	~~EPOXY-GRAY~~	~~3.5~~		
$1^{3B}, 10^{2}$		22					~~9~~	~~1~~	~~EPOXY-RED~~	~~6.5~~	~~10.0~~	
10^{2}		23							~~NON-SKID~~			
		24										
	CONTAINER GUIDES & BRKTS	25					4	1	EPOXY-GRAY	3.5		
		26					7	1	EPOXY-WHITE	3.5	7.0	
		27										
$18^{3}22^{20}$	CONTAINER GUIDES	28					38	1	FLUORESCENT YELLOW	2.0		
	(18" BELOW TOP OF GUIDE ONLY)	29										
		30										
$18^{2}22^{8}$	TWEEN DECKS, PAINT STRIPE 3" WIDE,	31					38	1	FLUORESCENT YELLOW	2.0		
	INNERMOST EDGE 36" FROM HATCH COAMING	32										
		33										
	INACCESSIBLE VOID BET MN & RAISED MN DK FRS 170 TO 181 P/S	34			—				—			FILLED WITH FOAM BY OUTSIDE CONTRACTOR
		35										
	VOID BET MN & RAISED MN DK - FR 157 TO 170	36	14	2	ZINC CHROMATE	3.0						

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PAINT SCHEDULE

HULL NO 4650-51 JOB NO 161-5 SHEET 28

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	REFRIGERATED HOLDS	2										
	Nº 5, 5A, 5B, 5C, 6 & 7	3										
	TOP OF COCOON TO TANK TOP	4										
	BHDS, SHELL, LONG'L BHD (BET 2ND & MN DK)	5	34	1	CATHCOAT	3.0						
	TANK TOP, STEEL DOORS & ATTACHED STRUCTURE	6										
		7										
	VERT & TRANS BOX GIRDERS IN COCOONS	8	34	1	CATHCOAT	3.0						
	EXTERIOR ONLY	9										
		10										
	EXTERIOR SURFACE OF THE TRANS BOX	11	34	1	CATHCOAT	3.0						
	GIRDERS. EXTERIOR OF THE ℄ LONG'L	12										
	BOX GIRDERS, WHICH IS ONLY COATED	13										
	APPROX 7'-0" FROM THE FWD SIDE OF THE	14										
	TRANS BHD & 4'-0" FROM AFT SIDE OF BHD	15										
	GIRDERS ON THE UNDESIDE OF THE MN DK.	16										
		17										
$14^{6}15'$	INB'D SIDE OF THE LONG'L BHD (EXCLUDING THE GALV	18	34	1	CATHCOAT	3.0	36	1	BUFF	8.0	11.0	FINISH COAT Nº 36 APPLIED
15'	PANELS) FROM THE UNDERSIDE OF 2ND DK TO 21'-8"	19										BY OUTSIDE CONTRACTOR
15'	FLAT, VERTICAL & HORZ CHANNEL STIFFS, CONTAINER	20										
15'	GUIDES & STEEL DOORS.	21										
12' 15'	REMAINING EXT. SURFACE OF ℄ LONG'L BOX GIRDER &	22	34	1	CATHCOAT	3.0	7	1	EPOXY-WHITE	4.0	7.0	
9^{3} 12' 15'	THE INTERIOR & EXT SURFACE OF TRANS MID-HOLD BOX	23										
9^{3} 12' 15'	GIRDER UNDER MAIN DECK.	24										
12' 15'	ALL VETILATION SCREENING (GALV STL)	25	19	1	PRE-TREATMENT	.5	7	1	EPOXY-WHITE	4.0	4.5	
4'	LONG'L BHD BETWEEN 2ND DK & 21'-8" FLAT	26										
$4^{2}14^{3}$	14 GAUGE SHT STEEL GALV PANELS	27	19	1	PRE-TREATMENT	.5	7	1	EPOXY-WHITE	4.0	4.5	
	INB'D SIDE ONLY	28										
		29										
4^{3}	INTERIOR OF HORZ DEEP BEAMS ON	30	18	1	EPOXY-YELLOW	1.5						
	TRANS BHDS BETWEEN 21'-8" &	31										
	31'-4" FLATS - (VENT DUCT AREA)	32										
		33										
9^{5}	INCLINED LADDERS & HANDRAILS (GALV)	34	18	1	EPOXY-YELLOW	1.5	7	1	EPOXY-WHITE	4.0	5.5	
		35										
		36										

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HULL NO 4650-51	PAINT SCHEDULE										JOB NO 161-5	SHEET 29
ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	REFRIGERATED HOLDS	2										
	Nº 5, 5A, 5B, 5C, 6 & 7	3										
	TOP OF COCOON TO TANK TOP (CONT'D)	4										
		5										
	INTERIOR OF BOX GDRS UNDER MN DK	6										TRANS BOX GIRDERS
		7										& A PORTION OF THE
		8										TRANS MID-HOLD &
		9										℄ LONG'L BOX GIRDER
		10										TO BE FILLED WITH
		11										A FOAM TYPE INSULATION
		12										BY OUTSIDE CONTRACTOR
		13										
	INTERIOR PORTION OF ℄ BOX	14	33	–	MAGNAKOTE	–						RUST PREVENTIVE
	GIRDER NOT FILLED WITH FOAM	15										SPRAY APPLIED
	TYPE INSULATION	16										OR FILL & DRAIN
		17										AS NECESSARY
		18										
14^{8}	VENT DUCTS (10 GA SHT METAL GALV)	19	19	1	PRE TREATMENT	.5	36	1	BUFF	8.0	8.5	FINISH COAT Nº 36 APPLIED
		20										BY OUTSIDE CONTRACTOR
14^{9}	VENT DUCTS (10.2# STEEL PLATE)	21	34	1	CATHCOAT	3.0	36	1	BUFF	8.0	11.0	FINISH COAT Nº 36 APPLIED
		22										BY OUTSIDE CONTRACTOR
		23										
	2ND DECK PASSAGEWAY - P/S	24										
	BETWEEN 2ND DK & MAIN DECK	25										
	FR 93 TO 141	26										
	TRANS BHDS, OUT'BD SIDE OF LONG'L	27					4	1	EPOXY-GRAY	4.0		
	BHD, WEBS, SHELL, FWD & OUT'BD SIDES	28					7	1	EPOXY-WHITE	4.0	8.0	
	OF STAIRWELL ENCLOSURE BHDS	29										
	ABV 18" ABV DECK, OVERHEAD &	30										
	HANDRAILS	31										
		32										
17'	ALUMINUM CLOSING PLTS (IN WAY OF HORIZ DUCTS IN CARGO HOLDS)	33	—	—	—	—	—	—	—	—	—	NOT PAINTED
		34										
17' 22'	CONTAINER GUIDES	35					38	1	FLUORESCENT YELLOW	.5		
17'	(18" BELOW TOP OF GUIDES ONLY)	36										

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HULL NO 4650-51	PAINT SCHEDULE										JOB NO 161-5	SHEET 29A
ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR OF CONTAINER HOLDS	1										
	REFRIGERATED HOLDS	2										
	Nº 5, 5A, 5B, 5C, 6 & 7	3										
	2ND DK PASSAGEWAY P/S (CONT'D)	4										
	TRANS BHDS, OUT'BD SIDE OF LONG'L	5					4	1	EPOXY-GRAY	3.5		
	BHD, WEBS, SHELL, FWD & OUT'BD	6					5	1	EPOXY-RED	6.5	10.0	
	SIDES OF STAIRWELL ENCLOSURE	7										
	BHDS TO 18" ABV DECK	8										
		9										
3^{22}	LONG'L WALKWAY	10					4	1	EPOXY-GRAY	3.5		
		11					9	1	EPOXY-RED	6.5	10.0	
		12							NON-SKID			
		13										
	INTERIOR OF STAIRWELL	14	34	1	CATHCOAT	3.0						
	ENCLOSURE BHDS	15										
		16										
	FAN ROOMS - P/S FRS 93 - 141	17										
	BETWEEN 21'-8" FLAT & 2ND DECK	18										
	UNDERSIDE OF 2ND DECK, SHELL,	19	34	1	CATHCOAT	3.0						
	TRANS BHDS, WEBS, 31'-4" FLAT	20										
	(TOP & UNDERSIDE), TOP 21'-8" FLAT	21										
		22										
4^{4}	LONG'L BHD BETWEEN 21'-8" FLAT & 2ND DK	23	18	1	EPOXY-YELLOW	1.5	24	2	GLOSS ENAMEL WHITE	2.0	3.5	
4^{5}	14 GAUGE SHT STEEL GALV PANELS	24										
	OUT'BD SIDE ONLY	25										
		26										
4^{6}	LONG'L BHD BETWEEN 21'-8" FLAT &	27	18	1	EPOXY-YELLOW	1.5	24	2	GLOSS ENAMEL WHITE	2.0	4.0	
	2ND DK (OUT'BD SIDE ONLY), HORZ &	28										
	VERTICAL CHANNELS, BRKTS, STANS,	29										
	STEEL DOORS, INCLINED LADDERS	30										
	& HANDRAILS	31										
		32										
		33										
		34										
		35										
		36										

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HULL NO 4650-51

PAINT SCHEDULE

6 3 JOB NO 161- 4 SHEET 30

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (MACHINERY SPACES)	1										
		2										
	MACHINERY SPACE - FR 157 TO 184	3										
	BILGE TO UNDERSIDE OF FLOOR PLATES.	4										
	BILGES, BHDS, VERTICAL STRUCTURES,	5	10	1	MOBIL ZINC	2.5	35	1	EPOXY - RED	4.0	6.5	
	FOUNDATIONS & TANK TOP	6										
		7										
	MACHINERY SPACE - FR 157 TO 184	8										
	FROM TOP OF FLOOR PLATES TO	9	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.0	4.5	
	UNDERSIDE OF 36'-0" FLAT. APPROX	10							ENAMEL WHITE			
	6'-0" AFT FR 158, UNDERSIDE OF 26'-0"	11										
	FLAT. BHDS, SHELL & ATTACHED STEEL	12										
	STRUCTURES.	13										
		14										
	MACHINERY CASEING - FR 170 TO 181	15										
	FROM 2ND DECK LEVEL TO UNDERSIDE	16										
	OF CABIN DECK	17										
	BHDS, UNDERSIDE OF CABIN DECK,	18	14	2	ZINC CHROMATE	3.8						
	2ND DECK, PORTION OF 36'-0" FLAT	19										
	& UNDERSIDE OF STABILIZER TANK	20										
		21										
	EXHAUST PLENUM - FR 179 TO 182 - P/S	22										
	FROM MAIN DECK TO UNDERSIDE OF	23	10	1	MOBIL ZINC	2.5						
	CABIN DECK	24										
		25										
	VENT DUCTS	26	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		27	14	1	ZINC CHROMATE	1.5			ENAMEL WHITE			
		28										
	LADDER STRINGERS, HANDRAILS, GRATING	29	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.0	4.5	
	SUPPORTS	30							ENAMEL-WHITE			
		31										
	LADDER TREADS (CHECKER PLT.)	32	10	1	MOBIL-ZINC	2.5	5	1	EPOXY-RED	4.0	6.5	
		33										
	DECKS - 36'-0" FLAT & 26'-0" FLAT	34					4	1	EPOXY-GRAY	4.0		
		35					9	1	EPOXY-RED	4.0	8.0	
		36							NON-SKID			

HULL NO 4650-51

PAINT SCHEDULE

6 3 JOB NO 161- 4 SHEET 31

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (MACHINERY SPACES)	1										
	MACHINERY SPACE - FRS 157-184 (CONT'D)	2										
		3										
7	ENGINE ROOM FLOOR PLATES	4	10	1	MOBIL ZINC	2.5						
	(TOP SIDE ONLY)	5										
		6										
	SHAFT ALLEY - FRS 184 TO 207	7										
	BHDS, SHELL, BILGE TO FLOOR PLATE	8	10	1	MOBIL ZINC	2.5	35	1	EPOXY RED	4.0	6.5	
	LVL, UNDERSIDE OF FLOOR PLATES,	9										
	STEEL STRUCTURE SUPPORTS, FDNS	10										
	& TANK TOP	11										
		12										
	BHDS, SHELL, OVERHEAD, HANDRAILS & STAIRS,	13	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.0	4.5	
	VERTICAL LADDERS & STEEL DOORS ABOVE	14							ENAMEL-WHITE			
	FLOOR PLATE LEVEL.	15										
		16										
	SHAFT ALLEY FLOOR PLATES	17							OILED			
	(TOP SIDE ONLY)	18										
		19										
	VENT DUCTS	20	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		21	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		22										
	SHAFT ALLEY ACCESS & PUMP TRUNK	23										
	BHDS, SHELL & ATTACHED STEEL STRUCTURES	24					11	1	EPOXY - GRAY	4.0		
	ABOVE 18" ABOVE DECK, OVERHEAD &	25					12	1	EPOXY - WHITE	4.0	8.0	
	STEEL DOORS	26										
		27										
	BHDS, SHELL & ATTACHED STEEL STRUCTURES	28					11	1	EPOXY - GRAY	4.0		
	18" ABOVE DECK	29					5	1	EPOXY - RED	4.0	8.0	
		30										
	DECKS (HORIZONTAL SURFACES)	31					11	1	EPOXY - GRAY	4.0		
		32					9	1	EPOXY-RED	4.0	8.0	
		33							NON-SKID			
		34										
		35										
		36										

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-4

SHEET 32

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MACHINERY SPACES)	1										
		2										
	SHAFT ALLEY ACCESS & PUMP TRUNK (CONT'D)	3										
	INCLINED LADDER & HANDRAIL	4					11	1	EPOXY - GRAY	4.0		
		5					12	1	EPOXY - WHITE	4.0	8.0	
		6										
	INCLINED LADDER TREADS	7					11	1	EPOXY - GRAY	4.0		
		8					9	1	EPOXY - RED	4.0	8.0	
		9							NON - SKID			
		10										
	VENT DUCTS	11	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		12	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		13										
	STOREROOMS - 3RD DK - FRS 213 TO 223 - P/S	14										
	BHDS, SHELL & ATTACHED STEEL STRUCTURES	15	18	1	EPOXY-YELLOW	1.5	25	2	SEMI - GLOSS	3.0	4.5	
	ABOVE 18" ABOVE DECK, OVERHEAD &	16							ENAMEL-WHITE			
	STEEL DOORS	17										
		18										
	BHDS & SHELL TO 18" ABOVE DECK	19	18	1	EPOXY-YELLOW	1.5	5	1	EPOXY - RED	4.0	5.5	
		20										
	DECK	21					5	1	EPOXY - RED	4.0		
		22					9	1	EPOXY - RED	4.0	8.0	
		23							NON - SKID			
		24										
	VENT DUCTS	25	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		26	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		27										
	STEERING GEAR ROOM	28										
	BHDS, SHELL & ATTACHED STEEL STRUC-	29	18	1	EPOXY - YELLOW	1.5	25	2	SEMI - GLOSS	3.0	4.5	
	TURES ABOVE 18" ABOVE DECK. OVERHD	30							ENAMEL-WHITE			
	& STEEL DOORS	31										
		32										
	BHDS & SHELL TO 18" ABOVE DECK	33	18	1	EPOXY - YELLOW	1.5	5	1	EPOXY - RED	4.0	5.5	
		34										
		35										
		36										

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-4

SHEET 33

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MACHINERY SPACES)	1										
	STEERING GEAR ROOM (CONT'D)	2										
	DECK	3					5	1	EPOXY - RED	4.0		
		4					9	1	EPOXY - RED	4.0	8.0	
		5							NON - SKID			
		6										
	VENT DUCTS	7	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.5	5.0	
		8	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		9										
	WINDLASS & CAPSTAN MACH'Y ROOM	10										
	BHDS, SHELL & ATTACHED STEEL	11	18	1	EPOXY - YELLOW	1.5	25	2	SEMI - GLOSS	3.0	4.5	
	STRUCTURES ABOVE 18" ABOVE DECK	12							ENAMEL-WHITE			
	OVERHEAD & STEEL DOORS	13										
		14										
	BHDS, SHELL & ATTACHED STEEL	15										
	STRUCTURES TO 18" ABOVE DECK	16	18	1	EPOXY - YELLOW	1.5	5	1	EPOXY - RED	3.5	5.0	
		17										
	DECK	18					5	1	EPOXY - RED	4.0		
		19					9	1	EPOXY - RED	4.0	8.0	
		20							NON - SKID			
		21										
	VENT DUCTS	22	19	1	PRE-TREATMENT	.5	25	1	SEMI - GLOSS	3.0	5.0	
		23	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		24										
	MOTOR GENERATOR ROOM	25										
	FRS. 19 TO 25 - PORT SIDE - MAIN DK	26										
	SHELL & OVERHEAD	27	18	1	EPOXY - YELLOW	1.5	25	2	SEMI - GLOSS	3.5	5.0	
		28							ENAMEL - WHITE			
		29										
	DECK	30					5	1	EPOXY - RED	4.0		
		31					9	1	EPOXY - RED	4.0	8.0	
		32							NON - SKID			
		33										
	VENT DUCTS	34	19	1	PRE-TREATMENT	.5	25	1	SEMI - GLOSS	3.0	5.0	
		35	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		36										

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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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PAINT SCHEDULE

HULL NO 4650-51

JOB NO 161- 4

SHEET 34

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MACHINERY SPACES)	1										
	BOW THRUSTER MACH'Y RM & TRUNK	2										
	BHDS, SHELL, ATTACHED STEEL	3	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.0	4.5	
	STRUCTURES ABOVE 18" ABOVE T.T.	4							ENAMEL-WHITE			
	HANDRAIL & OVERHEAD	5										
		6										
	BHDS, SHELL, FNDS & STEEL GRATING	7	18	1	EPOXY-YELLOW	1.5	5	1	EPOXY-RED	3.5	5.0	
	SUPPORTS TO 18" ABOVE T.T.	8										
		9										
	TANK TOP	10					5	1	EPOXY-RED	4.0		
		11					9	1	EPOXY-RED	4.0	8.0	
		12							NON-SKID			
		13										
	VENT DUCTS	14	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		15	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		16										
	FWD PUMP ROOM - FRS 16 to 21	17										
	BHDS, SHELL, ATTACHED STEEL	18	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.0	4.5	
	STRUCTURES ABOVE 18" ABOVE T.T	19							ENAMEL-WHITE			
	OVERHEAD	20										
		21										
	BHDS, SHELL & GRATING SUPPORTS TO	22	18	1	EPOXY-YELLOW	1.5	5	1	EPOXY-RED	3.5	5.0	
	18" ABOVE T.T.	23										
		24										
	TANK TOP	25					5	1	EPOXY-RED	4.0		
		26					9	1	EPOXY-RED	4.0	8.0	
		27							NON-SKID			
		28										
	VENT DUCTS	29	19	1	PRE-TREATMENT	.5	25	1	SEMI-GLOSS	3.0	5.0	
		30	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		31										
		32										
		33										
		34										
		35										
		36										

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PAINT SCHEDULE

HULL NO 4650-51

JOB NO 161- 3

SHEET 35

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (FOCSLE - MAIN - 2ND DECKS)	1										
		2										
	BOOBY HATCH - FRS 17 TO 19 - ℄ - FOCSLE DK	3										
	BHDS, OVERHEAD, STEEL DOOR & ATTACHED	4	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.0	4.5	
	STEEL STRUCTURES	5							ENAMEL-WHITE			
		6										
	BOSN'S STORES - FRS 19 TO 25 - MN. DK - P/S	7										
	OVERHEAD, OUTBD BHD (STBD SIDE ONLY)	8	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.0	4.5	
	K.P (PORT SIDE ONLY) ABOVE 18"	9							ENAMEL-WHITE			
	ABOVE DECK	10										
		11										
	OUTBD BHD (STB'D SIDE ONLY)	12	18	1	EPOXY-YELLOW	1.5	5	1	EPOXY-RED	3.5	5.0	
	K.P. (PORT SIDE ONLY) TO 18"	13										
	ABOVE DECK	14										
		15										
	DECK	16					5	1	EPOXY-RED	4.0		
		17					9	1	EPOXY-RED	4.0	8.0	
		18							NON-SKID			
		19										
	VENT DUCTS	20	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		21	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		22										
	PAINT LOCKER - FRS 15-26 - STBD SIDE - MAIN DK	23	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.5	5.0	
	BHDS, SHELL, OVERHEAD & STEEL DOOR	24							ENAMEL-WHITE			
		25										
	DECK	26					5	1	EPOXY-RED	4.0		
		27					9	1	EPOXY-RED	4.0	8.0	
		28							NON-SKID			
		29										
	BOSN STORES - F.P. TO FR. 27 - 2ND DECK	30										
	BHDS, SHELL, OVERHEAD & ATTACHED STEEL	31	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.5	5.0	
	STRUCTURES ABOVE 18" ABOVE DECK	32							ENAMEL-WHITE			
		33										
		34										
		35										
		36										

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HULL NO 4650-51 | PAINT SCHEDULE | JOB NO 161-3 | SHEET 36

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (FOCSLE - MAIN - 2ND DK)	1										
	BOSN STORES - FP to FR27 - 2ND DK (CONT'D)	2										
	BHDS, SHELL & ATTACHED STEEL	3	18	1	EPOXY - YELLOW	1.5	5	1	EPOXY - RED	3.5	5.0	
	STRUCTURES TO 18" ABOVE DECK	4										
		5										
	DECK	6					5	1	EPOXY - RED	4.0		
		7					9	1	EPOXY - RED	4.0	8.0	
		8							NON - SKID			
		9										
	VENT DUCTS	10	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.5	5.0	
		11	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										
		21										
		22										
		23										
		24										
		25										
		26										
		27										
		28										
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

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HULL NO | PAINT SCHEDULE | JOB NO 161-3 | SHEET 37

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (MACHINERY FLATS)	1										
		2										
	DECK TOILET	3										
	26'-0" FLAT - FRS 166 to 168 - PORT SIDE	4										
	BHDS, SHELL, OVERHEAD & ATTACHED	5	18	1	EPOXY-YELLOW	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	STEEL STRUCTURES ABOVE 18" ABOVE	6							ENAMEL-WHITE			
	DECK, & STEEL DOOR	7										
		8										
	BHDS, SHELL & ATTACHED STEEL STRUCTURES	9	18	1	EPOXY-YELLOW	1.5	5	1	EPOXY-RED	3.5	5.0	
		10										
	DECK (TERRAZZO)	11										
		12										
	ENGR'S WORKSHOP & STRM - ELEC WORKSHOP & STRM	13										
	36'-0" FLAT - FRS 165 to 181 - PORT SIDE	14										
	BHDS, SHELL, OVERHEAD & ATTACHED STEEL	15	18	1	EPOXY-YELLOW	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	STRUCTURES	16							ENAMEL-WHITE			
		17										
	DECK	18					5	1	EPOXY - RED	4.0		
		19					9	1	EPOXY - RED	4.0	8.0	
		20							NON - SKID			
		21										
	VENT DUCTS	22	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		23	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		24										
	STOREROOM	25										
	36'-0" FLAT - FRS 165 to 170 - STB'D SIDE	26										
	BHDS, SHELL, OVERHEAD, ATTACHED	27	18	1	EPOXY - YELLOW	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	STEEL STRUCTURES & STEEL DOOR	28							ENAMEL-WHITE			
		29										
	DECK	30					5	1	EPOXY - RED	4.0		
		31					9	1	EPOXY - RED	4.0	8.0	
		32							NON - SKID			
		33										
		34										
		35										
		36										

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3 **SHEET** 38

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (AFT DECK HOUSE)	1										
	FORK LIFT TRUCK STOW.	2										
	MAIN DECK - FRS 217 TO 223 - P/S	3										
	BHDS, OVERHEAD, ATTACHED STEEL	4	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.5	5.0	
	STRUCTURES & STEEL DOORS ABOVE	5							ENAMEL-WHITE			
	18" ABOVE DECK	6										
		7										
8'	BHDS, STEEL DOORS & ATTACHED	8	18	1	EPOXY-YELLOW	1.5	5	1	EPOXY-RED	4.0	5.5	
	STEEL STRUCTURES TO 18" ABOVE DK	9										
		10										
	UNDERSIDE OF PERMANENT RAMP	11	18	1	EPOXY-YELLOW	1.5						
		12										
	UNDERSIDE OF PORTABLE RAMP & SIDES	13	18	1	EPOXY-YELLOW	1.5	5	1	EPOXY-RED	3.5	5.0	
	OF BOTH PERMANENT & PORTABLE RAMPS	14										
		15										
	DECK & TOP OF BOTH PERMANENT	16					5	1	EPOXY-RED	4.0		
	& PORTABLE RAMPS	17					9	1	EPOXY-RED	4.0	8.0	
		18							NON-SKID			
		19										
	VENT DUCTS	20	19	1	PRE-TREATMENT	.5	25	1	SEMI-GLOSS	3.0	5.0	
		21	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		22										
	MOTOR GENERATOR ROOM	23										
	FRS 217 TO 223 - MAIN DK - PORT SIDE	24										
	BHDS, OVERHEAD, ATTACHED STEEL	25	18	1	EPOXY-YELLOW	1.5	25	1	SEMI-GLOSS	3.5	5.0	
8^{2}	STRUCTURES & STEEL DOOR ~~ABOVE~~	26							ENAMEL-WHITE			
8^{3}	~~18" ABOVE DECK~~	27										
		28										
8^{2}	~~BHDS, STEEL DOORS & ATTACHED~~	29	~~18~~	~~1~~	~~EPOXY-YELLOW~~	~~1.5~~	~~5~~	~~1~~	~~EPOXY-RED~~	~~3.5~~	~~5.0~~	
8^{2}	~~STEEL STRUCTURES TO 18" ABOVE DECK~~	30										
		31										
	DECK	32					5	1	EPOXY-RED	4.0		
		33					9	1	EPOXY-RED	4.0	8.0	
		34							NON-SKID			
		35										
		36										

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3 **SHEET** 39

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (AFT DECK HOUSE)	1										
	MOTOR GENERATOR ROOM (CONT'D)	2										
	FRS 217 TO 223 - MAIN DK - PORT SIDE	3										
	VENT DUCTS	4	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		5	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		6										
	DECK LOCKER	7										
	FRS 217 TO 223 - MAIN DK - STB'D SIDE	8										
	BHDS, OVERHEAD, STEEL DOOR AND	9	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.5	5.0	
8^{4}	ATTACHED STEEL STRUCTURES ~~ABOVE~~	10							ENAMEL-WHITE			
8^{5}	~~18" ABOVE DECK~~	11										
		12										
8^{5}	~~BHDS, STEEL DOOR & ATTACHED~~	13	~~18~~	~~1~~	~~EPOXY-YELLOW~~	~~1.5~~	~~5~~	~~1~~	~~EPOXY-RED~~	~~3.5~~	~~5.0~~	
8^{5}	~~STEEL STRUCTURES~~	14										
		15										
	DECK	16					5	1	EPOXY-RED	4.0		
		17					9	1	EPOXY-RED	4.0	8.0	
		18							NON-SKID			
		19										
	VENT DUCTS	20	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		21	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		22										
	AIR INLET PLENUM	23										
	FRS. 217 TO 223 - MAIN DK - PORT SIDE	24										
	BHDS & OVERHEAD	25	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		26							ENAMEL-WHITE			
		27										
	DECK	28					4	1	EPOXY-GRAY	4.0		
		29					5	1	EPOXY-RED	4.0	8.0	
		30										
		31										
		32										
		33										
		34										
		35										
		36										

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PAINT SCHEDULE

HULL NO 4650-51

JOB NO 161-3

SHEET 40

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (AFT DECK HOUSE)	1										
		2										
	PASSAGEWAY	3										
	FRS 217 TO 223 - MAIN DK - PORT SIDE	4										
	BHDS, OVERHEAD, STEEL DOOR AND	5	18	1	EPOXY - YELLOW	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	ATTACHED STEEL STRUCTURES	6							ENAMEL - WHITE			
	ABOVE 18" ABOVE DECK	7										
		8										
	BHDS, STEEL DOOR & ATTACHED	9	18	1	EPOXY - YELLOW	1.5	5	1	EPOXY - RED	3.5	5.0	
	STEEL STRUCTURES TO 18" ABOVE DK	10										
		11										
	DECK	12					5	1	EPOXY - RED	4.0		
		13					9	1	EPOXY - RED	4.0	8.0	
		14							NON-SKID			
		15										
		16										
		17										
		18										
		19										
		20										
		21										
		22										
		23										
		24										
		25										
		26										
		27										
		28										
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

PAINT SCHEDULE

HULL NO 4650-51

JOB NO 161-3

SHEET 41

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (MIDSHIP HOUSE - MAIN DK)	1										
	REFRIGERATED SPACES	2										
	FRS 157 TO 168 - MAIN DECK - STB'D SIDE	3										
16^{L}	BOUNDING STEEL BHDS & OVERHEAD	4	14	2	ZINC CHROMATE	3.5	37	1	ASPHALT EMUL			
		5										
16^{L}	DECK (INSULATION)	6	14	1	ZINC CHROMATE	1.5	37	1	ASPHALT EMUL			
		7										
	REFRIGERATED DOORS	8										BY JOINER CONTR
		9										
	GALLEY & SCULLERY	10										
	FRS 157 TO 168 - MAIN DK - P/S	11										
	BOUNDING STEEL BHDS	12	14	2	ZINC CHROMATE	3.5						
		13										
19^{3}	DECK (QUARRY TILE)	14	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		15										
	JOINER DOORS	16										BY JOINER CONTR
		17										
	VENT DUCTS	18	19	1	PRE-TREATMENT	.5						
		19	14	2	ZINC CHROMATE	3.5						
		20										
	DINING ROOM & DUTY OFFICER'S MESS RM	21										
	FRS 157-168 - MAIN DECK - PORT SIDE	22										
	BOUNDING STEEL BHDS & OVERHEAD	23	14	2	ZINC CHROMATE	3.5						
		24										
19^{3}	DECK (VINYL)	25	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		26										
	JOINER DOORS	27										BY JOINER CONTR
		28										
	VENT DUCTS	29	19	1	PRE-TREATMENT	.5						
		30	14	2	ZINC CHROMATE	3.5						
		31										
		32										
		33										
		34										
		35										
		36										

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HULL NO 4650-51		PAINT SCHEDULE									JOB NO 161-3	SHEET 42
ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - MAIN DK)	1										
	ELEVATOR TRUNK	2										
	FRS 164 TO 167 - MAIN DK - PORT SIDE	3										
	TO UNDERSIDE OF BRIDGE DECK	4										
	BHDS & OVERHEAD	5					11	1	EPOXY - GRAY	3.0		
		6					12	1	EPOXY - WHITE	3.0	6.0.	
		7										
	DECK	8					11	1	EPOXY - GRAY	3.0		
		9					5	1	EPOXY - RED	3.0	6.0	
		10										
	VESTIBULES - P/S	11										
	BHDS, OVERHEADS & STEEL DOORS	12	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
		13							ENAMEL - WHITE			
		14										BY DECK COVERING CONTR
$8^{E}, 19^{E}$	DECK (VINYL TILE)	15	~~14~~	~~2~~	~~ZINC CHROMATE~~	~~1.5~~						
		16										BY JOINER CONTR
	JOINER DOORS	17										
		18										
	TRANS, FWD & AFT PASSAGEWAYS	19										
	MAIN DECK	20										
	BOUNDING STEEL BHDS, OVERHEAD	21	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	& STEEL DOORS	22							ENAMEL-WHITE			
		23										BY DECK COVERING CONTR
19^{E}	DECK (VINYL)	24	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						
		25										BY JOINER CONTR
	JOINER DOORS	26										
		27										
	VENT DUCTS	28	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		29	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		30										
		31										
		32										
		33										
		34										
		35										
		36										

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HULL NO 4650-51		PAINT SCHEDULE									JOB NO 161-3	SHEET 43
ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - MAIN DK)	1										
	SOILED LINEN LOCKERS	2										
	FRS 169 TO 170 - MAIN DECK - P/S	3										
	BOUNDING STEEL BHDS & OVERHEAD	4	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
		5							ENAMEL - WHITE			
		6										
	DECK	7					4	1	EPOXY - GRAY	4.0		
		8					5	1	EPOXY - RED	4.0	8.0	
		9										BY JOINER CONTR
	JOINER DOORS	10										
		11										
	VENT DUCTS	12	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		13	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		14										
	STAIRWELL ENCLOSURE	15										
	FRS 169 TO 170 - MAIN DK - P/S	16										
	BOUNDING STEEL BHDS & OVERHEAD	17	14	2	ZINC CHROMATE	3.5						
		18										BY DECK COVERING CONTR
19^{E}	DECK (VINYL)	19	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						
		20										BY JOINER CONTR
	JOINER DOORS	21										
		22										
	VENT DUCTS	23	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		24	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		25										
	CLEANING GEAR LOCKER	26										
	FRS 169 TO 170 - MAIN DECK - PORT SIDE	27										
	BOUNDING STEEL BHDS & OVERHEAD	28	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
8^{E}		29							ENAMEL-WHITE			BY DECK COVERING CONTR
$8^{E}, 19^{E}$	DECK (TERRAZZO)	30	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						
		31										BY JOINER CONTR
	JOINER DOOR	32										
		33										
	VENT DUCTS	34	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		35	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		36										

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910
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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3 **SHEET** 44

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - MAIN DK)	1										
	SLOP CHEST	2										
	FRS 169 TO 172 - MAIN DECK - PORT SIDE	3										
	BOUNDING STEEL BHDS, AFT, OUT'BD & INBD	4	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.0	5.0	
	FRS 170 TO 172 & OVERHEAD	5							ENAMEL-WHITE			
		6										
	BOUNDING STEEL BHDS, FWD & INBD	7	14	2	ZINC CHROMATE	3.5						
	FRS 169 TO 170	8										
		9										
	SHEET METAL COVERING ON BOUNDING	10	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
	STEEL BHDS, FWD & INBD - FRS 169 TO 170	11	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		12										
	DECK	13					4	1	EPOXY-GRAY	4.0		
		14					9	1	EPOXY-RED	4.0	8.0	
		15							NON-SKID			
		16										
	JOINER DOORS	17										BY JOINER CONTR
		18										
	VENT DUCTS	19	19	1	PRE-TREATMENT	.5						
		20	14	2	ZINC CHROMATE	3.5						
		21										
	BONDED STORES	22										
	FRS 169 TO 172 - MAIN DECK - PORT SIDE	23										
	BOUNDING STEEL BHDS & OVERHEAD	24	14	2	ZINC CHROMATE	3.5						
		25										
	SHEET METAL COVERING ON BOUNDING BHDS	26	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		27	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		28										
	DECK	29					4	1	EPOXY-GRAY	4.0		
		30					5	1	EPOXY-RED	4.0	8.0	
		31										
	JOINER DOOR	32										BY JOINER CONTR
		33										
	VENT DUCTS	34	19	1	PRE TREATMENT	.5						
		35	14	2	ZINC CHROMATE	3.5						
		36										

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3 **SHEET** 45

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - MAIN DK)	1										
	GARBAGE ROOM	2										
	FRS 170 TO 173 - MAIN DK - STB'D SIDE	3										
	INB'D & AFT BOUNDING STEEL BHDS & DOOR	4	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		5							ENAMEL-WHITE			
		6										
	FWD & OUTBD BOUNDING STEEL BHDS &	7	14	2	ZINC CHROMATE	3.5						
	OVERHEAD	8										
		9										
	SHEET METAL COVERING ON FWD &	10	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
	OUT'BD BOUNDING BHDS	11	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		12										
19C	DECK (QUARRY TILE)	13	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		14										
	VENT DUCTS	15	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		16	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		17										
	CLEAN LINEN LOCKER	18										
	FRS 170 TO 173 - MAIN DECK - STB'D SIDE	19										
	FWD, INBD & AFT BOUNDING STEEL BHDS	20	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		21							ENAMEL-WHITE			
		22										
	OUT'BD BOUNDING STEEL BHD & OVERHEAD	23	14	2	ZINC CHROMATE	3.5						
		24										
	DECK	25					11	1	EPOXY-GRAY	4.0		
		26					5	1	EPOXY-RED	4.0	8.0	
8B		27							NON-SKID			
	JOINER DOOR	28										BY JOINER CONTR.
		29										
	VENT DUCTS	30	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		31	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		32										
		33										
		34										
		35										
		36										

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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HULL NO 4650-51 | **PAINT SCHEDULE** | JOB NO 161- 3 | SHEET 46

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE MAIN DK)	1										
	STEWARD. DEPT OFFICE	2										
	FRS 173 TO 175 - MAIN DK - STB'D SIDE	3										
	BOUNDING STEEL BHDS & OVERHEAD	4	14	2	ZINC CHROMATE	3.5						
		5										
19⁷	DECK (VINYL)	6	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		7										
	JOINER DOOR	8										BY JOINER CONTR
		9										
	VENT DUCTS	10	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		11	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		12										
	DRY STORES	13										
	FRS 175 TO 180 - MAIN DK - STBD SIDE	14										
	FWD & AFT BOUNDING STEEL BHDS	15	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		16							ENAMEL-WHITE			
	INB'D & OUT'BD BOUNDING STEEL	17	14	2	ZINC CHROMATE	3.5						
	BHDS & OVERHEAD	18										
		19										
	DECK	20					4	1	EPOXY-GRAY	4.0		
		21					5	1	EPOXY-RED	4.0	8.0	
		22							NON-SKID			
8⁹	JOINER DOOR	23										BY JOINER CONTR
		24										
	VENT DUCTS	25	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		26	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		27										
	STEWARD SPECIAL LOCKER	28										
	FRS. 177 TO 180 - MAIN DK - STB'D SIDE	29										
	BOUNDING STEEL BHDS & STEEL DOORS	30	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		31							ENAMEL-WHITE			
		32										
	OVERHEAD	33	14	2	ZINC CHROMATE	3.5						
		34										
		35										
		36										

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HULL NO 4650-51 | **PAINT SCHEDULE** | JOB NO 161- 3 | SHEET 47

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - MAIN DK)	1										
	STEWARD SPECIAL LOCKER (CONT'D)	2										
	DECK	3					4	1	EPOXY-GRAY	4.0		
		4					9	1	EPOXY-RED	4.0	8.0	
		5							NON-SKID			
		6										
	VENT DUCTS	7	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		8	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		9										
	TALLY CLERK'S OFFICE	10										
	FRS 180 TO 182 - MAIN DK - STB'D SIDE	11										
	BOUNDING STEEL BHDS, OVERHEAD &	12	14	2	ZINC CHROMATE	3.5						
	STEEL DOOR ABOVE 18" ABOVE DECK	13										
		14										
7⁵	BOUNDING STEEL BHDS & STEEL DOOR	15	10	1	MOBIL ZINC	2.5						
	TO 18" ABOVE DECK	16										
		17										
19⁸	DECK (TERRAZZO)	18	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		19										
	VENT DUCTS	20	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		21	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		22										
	DECK TOILET	23										
	FRS. 180 TO 182 - MAIN DECK - STB'D SIDE	24										
	AFT BOUNDING STEEL BHD, OVERHEAD &	25	14	2	ZINC CHROMATE	3.5						
	AFT STEEL DOOR ABOVE 18" ABOVE DECK	26										
		27										
7⁶	AFT BOUNDING STEEL BHD & AFT STEEL	28	10	1	MOBIL ZINC	2.5						
	DOOR AT 18" ABV DECK	29										
		30										
	SHEET METAL COVERING AFT BHD	31	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		32	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE.			
		33										
		34										
		35										
		36										

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3 SHEET 48

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE MAIN DK)	1										
	DECK TOILET (CONT'D)	2										
	BOUNDING STEEL BHD FWD, INB'D &	3	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
	OUTBD ABOVE 18" ABOVE DK	4							ENAMEL-WHITE			
		5										
	BOUNDING STEEL BHD FWD, INB'D &	6	10	1	MOBILZINC	3.0	25	2	SEMI-GLOSS	3.0	7.0	
	OUT'BD TO 18" ABOVE DECK	7	18	1	EXPOXY-YELLOW	1.0			ENAMEL-WHITE			
		8										
19^2	DECK (TERRAZZO)	9	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		10										
	VENT DUCTS	11	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		12	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		13										
	CREW'S MESS & RECREATION ROOM	14										
	FRS. 170 TO 182 - MAIN DECK - PORT. SIDE	15										
	BOUNDING STEEL BHDS & OVERHEAD	16	14	2	ZINC CHROMATE	3.5						
		17										
19^2	DECK (VINYL TILE)	18	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		19										
	JOINER DOORS	20										BY JOINER CONTR.
		21										
	VENT DUCTS	22	19	1	PRE-TREATMENT	.5						
		23	14	2	ZINC CHROMATE	3.5						
		24										
		25										
		26										
		27										
		28										
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3 SHEET 49

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - UPPER DK)	1										
	STATEROOMS	2										
	FRS 157 TO 182 - UPPER DECK - FWD & P/S	3										
	FWD, AFT & OUT'BD BOUNDING STEEL	4	14	2	ZINC CHROMATE	3.5						
	BHDS & OVERHEAD	5										
		6										
19^2	STATEROOM DECK (VINYL)	7	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		8										
19^2	STATEROOM TOILET & SHOWER DK (TERRAZZO)	9	~~14~~	~~2~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR.
		10										
	VENT DUCTS	11	19	1	PRE-TREATMENT	.5						
		12	14	2	ZINC CHROMATE	3.5						
		13										
	CREW LAUNDRY	14										
	FRS 164 TO 168 - UPPER DK - STB'D SIDE	15										
	OVERHEAD, FWD & OUT'BD BOUNDING STEEL	16	14	2	ZINC CHROMATE	3.5						
	BHDS ABOVE 18" ABOVE DECK	17										
		18										
7^7	FWD & OUT'BD BOUNDING STEEL BHDS	19	10	1	MOBILZINC	2.5						
	TO 18" ABOVE DECK	20										
		21										
	SHEET METAL COVERING ON FWD &	22	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
	OUT'BD BOUNDING STEEL BHDS	23	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		24										
	AFT & INB'D BOUNDING STEEL BHDS	25	14	2	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.0	4.5	
	ABOVE 18" ABOVE DECK	26							ENAMEL-WHITE			
		27										
	AFT & INB'D BOUNDING STEEL BHDS	28	10	1	MOBILZINC	3.0	25	2	SEMI-GLOSS	3.0	7.0	
	TO 18" ABOVE DECK	29	18	1	EPOXY-YELLOW	1.0			ENAMEL-WHITE			
		30										
19^2	DECK (TERRAZZO)	31	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR.
		32										
	JOINER DOOR	33										BY JOINER CONTR.
		34										
	VENT DUCTS	35	19	1	PRE-TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		36	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161- 3 **SHEET** 50

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - UPPER DK)	1										
	OFFICE SUPPLY, CLEANING GEAR & LINEN LKRS	2										
	FRS 164 TO 168 - UPPER DK - STB'D SIDE	3										
	BOUNDING STEEL BHDS	4	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
		5							ENAMEL - WHITE			
8lb	OVERHEAD	6	14	2	ZINC CHROMATE	3.5	25	2	SEMI - GLOSS	3.5	5.0	
8lb		7							ENAMEL - WHITE			
	DECKS - OFFICE SUPPLY & LINEN LKRS	8					4	1	EPOXY - GRAY	4.0		
		9					5	1	EPOXY - RED	4.0	8.0	
		10										
19#	DECK - CLEANING GEAR LKR (TERRAZZO)	11	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		12										
	JOINER DOORS	13										BY JOINER CONTR
		14										
	VENT DUCTS	15	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		16	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		17										
	LOCKER	18										
	FRS 168 TO 170 - UPPER DK - STB'D SIDE	19										
	BOUNDING STEEL BHDS & OVERHEAD	20	14	2	ZINC CHROMATE	3.5						
		21										
	FWD, AFT & INB'D BOUNDING STEEL BHDS	22	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
		23							ENAMEL - WHITE			
		24										
	SHEET METAL COVERING ON OUT'BD	25	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
	BOUNDING BHD	26	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		27										
	DECK	28					4	1	EPOXY - GRAY	4.0		
		29					9	1	EPOXY - RED	4.0	8.0	
		30							NON - SKID			
		31										
	JOINER DOOR	32										BY JOINER CONTR
		33										
	VENT DUCTS	34	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		35	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		36										

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161- 3 **SHEET** 51

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - UPPER DK)	1										
	LOCKER	2										
	FRS 164 TO 170 - UPPER DK - PORT SIDE	3										
	BOUNDING STEEL BHDS & OVERHEAD	4	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	AFT VENT TRUNK BHD, INB'D ELEVATOR	5							ENAMEL - WHITE			
	TRUNK BHD & PART OF FWD BHD	6										
	(D.F. RECESSED AREA)	7										
		8										
	SHEET METAL COVERING ON OUT'BD	9	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
	BHD, AFT ELEVATOR BHD & PART	10	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
8"	OF FWD INBD BHD	11										
		12										
	DECK	13					4	1	EPOXY - GRAY	4.0		
		14					9	1	EPOXY - RED	4.0	8.0	
		15							NON - SKID			
		16										
	JOINER DOOR	17										BY JOINER CONTR.
		18										
	VENT DUCTS	19	19	1	PRE-TREATMENT	.5	25	2	SEMI - GLOSS	3.5	5.0	
		20	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		21										
	STAIRWELL ENCLOSURE	22										
	FRS 168 TO 170 - UPPER DK - STB'D SIDE	23										
	BOUNDING STEEL BHDS & OVERHEAD	24	14	2	ZINC CHROMATE	3.5						
		25										
	STAIRWELL LANDINGS & TREADS (VINYL)	26	14	1	ZINC CHROMATE	1.5						BY DECK COVERING CONTR
		27										
	JOINER DOOR	28										BY JOINER CONTR
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

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BUILDERS PLAN NO. H-4650-161-00-01

Oct 1980 6X

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161- 3 SHEET 52

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - BOAT DK)	1										
	STATEROOMS, OFFICES; LOUNGE & PASSAGEWAYS	2										
	FRS 158 TO 182 - BOAT DECK - FWD & P/S	3										
	BOUNDING STEEL BHDS & OVERHEAD	4	14	2	ZINC CHROMATE	3.5						
		5										
19a	DECK (VINYL)	6	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		7										
19a	DECK IN CHIEF ENGR'S S.R. (CARPET)	8	~~14~~	~~2~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		9										
19a	TOILETS & SHOWERS STATERMS (TERRAZZO)	10	~~14~~	~~2~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		11										
19a	TOILET & SHOWER CHIEF ENGR'S (CERAMIC TILE)	12	~~14~~	~~2~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		13										
	VENT DUCTS	14	19	1	PRE TREATMENT	.5						
		15	14	1	ZINC CHROMATE	3.5						
		16										
	OFFICER'S LAUNDRY	17										
	FRS 164 TO 168 - BOAT DK - STB'D SIDE	18										
	OVERHEAD, FWD & OUT'BD BOUNDING	19	14	2	ZINC CHROMATE	3.5						
	STEEL BHDS ABOVE 18" ABOVE DECK	20										
		21										
7a	FWD & OUT'BD BOUNDING STEEL BHDS	22	10	1	MOBILZINC	2.5						
	TO 18" ABOVE DECK	23										
		24										
	SHEET METAL COVERING FWD & OUT'BD	25	19	1	PRE TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
	BOUNDING STEEL BHDS	26	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		27										
	AFT & INB'D BOUNDING STEEL BHDS	28	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	ABOVE 18" ABOVE DECK	29							ENAMEL - WHITE			
		30										
	AFT & INB'D BOUNDING STEEL BHDS	31	10	1	MOBILZINC	3.0	25	2	SEMI - GLOSS	3.0	7.0	
	TO 18" ABOVE DECK	32	18	1	EPOXY - YELLOW	1.0			ENAMEL - WHITE			
		33										
		34										
		35										
		36										

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161- 3 SHEET 53

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - BOAT DK)	1										
	OFFICER'S LAUNDRY (CONT'D)	2										
19a	DECK (TERRAZZO)	3	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		4										
	JOINER DOOR	5										BY JOINER CONTR
		6										
	VENT DUCTS	7	19	1	PRE TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		8	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		9										
	DECK DEPT LOCKER	10										
	FRS 167 TO 170 - BOAT DK - STB'D SIDE	11										
	OVERHEAD & BOUNDING STEEL BHDS	12	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
		13							ENAMEL - WHITE			
		14										
	DECK	15					4	1	EPOXY - GRAY	4.0		
		16					9	1	EPOXY - RED	4.0	8.0	
		17							NON - SKID			
		18										
	JOINER DOOR	19										BY JOINER CONTR
		20										
	VENT DUCTS	21	19	1	PRE TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		22	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		23										
		24										
	LINEN, CLEANING GEAR & OILSKIN LKRS	25										
	FRS 164 TO 168 - BOAT DK - STB'D SIDE	26										
	OVERHEAD & BOUNDING STEEL BHDS	27	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
		28							ENAMEL - WHITE			
		29										
	DECK - LINEN & OILSKIN LKRS	30					4	1	EPOXY - GRAY	4.0		
		31					5	1	EPOXY - RED	4.0	8.0	
8a		32							NON-SKID			
19a	DECK - CLEANING GEAR LKR (TERRAZZO)	33	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		34										
		35										
		36										

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. H-4650-161-00-01

FRAME 31 OF 38

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. H-4650-161-00-01

FRAME 32 OF 38

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3 SHEET 54

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - BOAT DK)	1										
	LINEN, CLEANING GEAR & OILSKIN LKRS (CONT'D)	2										
	JOINER DOORS	3										BY JOINER CONTR
		4										
	VENT DUCTS	5	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		6	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		7										
	PUBLIC TOILET	8										
	FRS 165 TO 167 - BOAT DK - PORT SIDE	9										
	OVERHEAD & BOUNDING STEEL BHDS	10	14	2	ZINC CHROMATE	3.5						
		11										
19d	DECK (TERRAZZO)	12	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		13										
	JOINER DOOR	14										BY JOINER CONTR
		15										
	VENT DUCTS	16	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		17	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		18										
	ENGINE DEPT LOCKER	19										
	FRS 167 TO 170 - BOAT DECK - PORT SIDE	20										
	OVERHEAD & BOUNDING STEEL BHDS	21	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		22							ENAMEL-WHITE			
		23										
	DECK	24					4	1	EPOXY-GRAY	4.0		
		25					9	1	EPOXY-RED	4.0	8.0	
		26							NON-SKID			
		27										
	JOINER DOOR	28										BY JOINER CONTR.
		29										
	VENT DUCTS	30	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		31	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		32										
		33										
		34										
		35										
		36										

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3 SHEET 55

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - BOAT DK)	1										
	STAIRWELL ENCLOSURE	2										
	FRS 168 TO 170 - BOAT DECK - ℄	3										
	OVERHEAD & BOUNDING STEEL BHDS	4	14	2	ZINC CHROMATE	3.5						
		5										
	STAIRWELL LANDINGS & TREADS (VINYL)	6	14	2	ZINC CHROMATE	3.5						BY DECK COVERING CONTR
		7										
	JOINER DOOR	8										BY JOINER CONTR
		9										
		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
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		25										
		26										
		27										
		28										
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161- 3 **SHEET** 56

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (MIDSHIP HOUSE - CABIN DK)	1										
	STATEROOMS, PASSAGEWAY, PANTRY, BAR,	2										
	CARD ROOM, LOUNGE, LIBRARY	3										
	& PASSENGER'S LAUNDRY	4										
	OVERHEAD & BOUNDING STEEL BHDS	5	14	2	ZINC CHROMATE	3.5						
		6										
	DECK - S.R. TOILET & SHR AREA &	7										
19st	PASSENGER BATH (CERAMIC TILE)	8	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		9										
19st	DECK - PANTRY & BAR AREA (QUARRY TILE)	10										
		11										
19st	DECK - CARD ROOM (VINYL)	12										
		13										
19st	DECK - LOUNGE & LIBRARY (CARPET)	14										
		15										
19st	DECK - PASSENGERS LAUNDRY (TERRAZZO)	16										
		17										
	JOINER DOORS	18										BY JOINER CONTR
		19										
	VENT DUCTS	20	19	1	PRE TREATMENT	.5						
		21	14	1	ZINC CHROMATE	1.5						
		22										
	PASSENGER BAGGAGE ROOM	23										
	FRS 168 TO 170 - CABIN DECK - STB'D SIDE	24										
	INB'D, OUT'BD & AFT BOUNDING STEEL BHDS	25	14	2	ZINC CHROMATE	3.5						
	& PARTIAL PORTION OF FWD BOUNDING	26										
	BHD & OVERHEAD	27										
		28										
	PARTIAL PORTION OF FWD	29	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	BOUNDING STEEL BHD	30							ENAMEL-WHITE			
		31										
		32										
		33										
		34										
		35										
		36										

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161- 3 **SHEET** 57

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (MIDSHIP HOUSE - CABIN DK)	1										
	PASSENGER'S BAGGAGE RM (CONT'D)	2										
	SHEET METAL COVERING ON BOUNDING	3	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
	STEEL BHDS	4	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		5										
	DECK	6					4	1	EPOXY-GRAY	4.0		
		7					9	1	EPOXY-RED	4.0	8.0	
		8							NON-SKID			
		9										
	JOINER DOOR	10										BY JOINER CONTR
		11										
	VENT DUCTS	12	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		13	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		14										
	STAIRWELL ENCLOSURE	15										
	FRS. 168 TO 170 - CABIN DK - ℄	16										
	OVERHEAD & BOUNDING STEEL BHDS	17	14	2	ZINC CHROMATE	3.5						
		18										
	STAIRWELL LANDINGS & TREADS (VINYL)	19	14	2	ZINC CHROMATE	3.5						BY DECK COVERING CONTR
		20										
	JOINER DOOR	21										BY JOINER CONTR
		22										
		23										
		24										
		25										
		26										
		27										
		28										
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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PAINT SCHEDULE

HULL NO 4650-51
JOB NO 161- 3
SHEET 58

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (MIDSHIP HOUSE - SUN DECK)	1										
	MASTER'S S.R., DAY RM, REPATRIATED	2										
	& RADIO OFFICER'S S.R., RADIO ROOM	3										
	& PASSAGEWAY	4										
	FRS 158 TO 165 - SUN DECK - P/S	5										
	OVERHEAD, BOUNDING STEEL BHDS	6	14	2	ZINC CHROMATE	3.5						
	EXCEPT PARTIAL PORTIONS OF RADIO	7										
	ROOM'S OUT'BD & AFT BHDS	8										
		9										
	PARTIAL PORTIONS OF RADIO ROOM'S	10	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	OUT'BD & AFT BHDS	11							ENAMEL-WHITE			
		12										
19th	DECK - MASTER'S T/S (CERAMIC TILE)	13	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		14										
19th	DECK - MASTER'S S.R. & DAY RM (CARPET)	15										
		16										
19th	DECK - REPATRIATED & RADIO OFFICER'S	17										
	T. & S. (TERRAZZO)	18										
		19										
19th	DECK - REPATRIATED & RADIO OFFICER'S	20										
	S.R. & PASSAGEWAY (VINYL)	21										
		22										
	JOINER DOORS	23										BY JOINER CONTR
		24										
	VENT DUCTS	25	19	1	PRE TREATMENT	.5						
		26	14	1	ZINC CHROMATE	3.5						
		27										
	DECK LOCKER	28										
	FRS 164 TO 168 - SUN DECK - STB'D SIDE	29										
	FWD BOUNDING STEEL BHD	30	14	2	ZINC CHROMATE	3.5						
		31										
	SHEET METAL COVERING ON FWD	32	19	1	PRE TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
	BOUNDING STEEL BHD	33	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		34										
		35										
		36										

PAINT SCHEDULE

HULL NO 4650-51
JOB NO 161- 3
SHEET 59

ALT NO	LOCATION	LINE NO	PRIMERS PAINT NO	PRIMERS NO COATS	PRIMERS TYPE	PRIMERS MDFT	FINISH PAINT NO	FINISH NO COATS	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIOR (MIDSHIP HOUSE - SUN DECK)	1										
	DECK LOCKER (CONT'D)	2										
	OVERHEAD, INB'D, OUT'BD & AFT BOUNDING	3	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
	STEEL BHDS & STEEL DOOR	4							ENAMEL-WHITE			
		5										
	DECK	6					4	1	EPOXY - GRAY	4.0		
		7					9	1	EPOXY - RED	4.0	8.0	
		8							NON - SKID			
		9										
	VENT DUCTS	10	19	1	PRE TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		11	14	1	ZINC CHROMATE	1.5			ENAMEL - WHITE			
		12										
	LOCKER	13										
	FRS 164 TO 168 - SUN DECK - STB'D SIDE	14										
	OVERHEAD, OUT'BD & AFT BOUNDING STEEL	15	14	2	ZINC CHROMATE	3.5						
	BHDS	16										
		17										
	SHEET METAL COVERING ON OUT'BD &	18	19	1	PRE TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
	AFT BOUNDING STEEL BHD & OVHD.	19	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		20										
	FWD & INB'D BOUNDING STEEL BHDS	21	14	1	ZINC CHROMATE	1.5	25	2	SEMI - GLOSS	3.5	5.0	
		22							ENAMEL - WHITE			
		23										
	DECK	24					4	1	EPOXY - GRAY	4.0		
		25					9	1	EPOXY - RED	4.0	8.0	
		26							NON - SKID			
		27										
	JOINER DOOR	28										BY JOINER CONTR.
		29										
	VENT DUCTS	30	19	1	PRE TREATMENT	.5	25	2	SEMI - GLOSS	3.0	5.0	
		31	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		32										
		33										
		34										
		35										
		36										

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161- 3

SHEET 60

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - SUN DK)	1										
	MASTERS GEAR LOCKER	2										
	FRS 164 TO 168 - SUN DECK - STBD SIDE	3										
	OVERHEAD & BOUNDING STEEL BHDS	4	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		5							ENAMEL-WHITE			
		6										
	DECK	7					4	1	EPOXY-GRAY	4.0		
		8					9	1	EPOXY-RED	4.0	8.0	
		9							NON-SKID			
		10										
	JOINER DOOR	11										BY JOINER CONTR
		12										
		13										
	VENT DUCTS	14	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		15	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		16										
	BONDED STORES	17										
	FRS. 164 TO 168 - SUN DECK - P/S	18										
	OVERHEAD & BOUNDING STEEL BHDS	19	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		20							ENAMEL-WHITE			
		21										
	DECK	22					4	1	EPOXY-GRAY	4.0		
		23					5	1	EPOXY-RED	4.0	8.0	
		24										
	JOINER DOOR	25										BY JOINER CONTR
		26										
	VENT DUCTS	27	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		28	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161- 3

SHEET 61

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - SUN DECK)	1										
	ELEVATOR MACHINERY ROOM	2										
	FRS 164 TO 168 - SUN DECK - PORT SIDE	3										
	OVERHEAD & FWD & INB'D BOUNDING	4	14	2	ZINC CHROMATE	3.5						
	STEEL BHDS	5										
		6										
	SHEET METAL COVERING ON OVERHEAD,	7	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
	FWD & INB'D BOUNDING STEELBHDS	8	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
	ABOVE 18" ABOVE DECK	9										
		10										
	SHEET METAL COVERING ON FWD & INB'D	11	19	1	PRE TREATMENT	.5	5	1	EPOXY-RED	4.0	6.0	
	BOUNDING STEEL TO 18" ABOVE DECK	12	18	1	EPOXY-YELLOW	1.5						
		13										
	AFT, OUT'BD & ELEVATOR TRUNK BOUNDING	14	18	1	EPOXY-YELLOW	1.5	25	2	SEMI-GLOSS	3.5	5.0	
	STEEL BHDS ABOVE 18" ABOVE DECK	15							ENAMEL-WHITE			
		16										
	AFT, OUT'BD & ELEVATOR TRUNK	17	18	1	EPOXY-YELLOW	1.5	5	1	EPOXY-RED	4.0	5.5	
	BOUNDING STEEL BHDS TO 18" ABV DK	18										
		19										
	DECK	20					5	1	EPOXY-RED	4.0		
		21					9	1	EPOXY-RED	4.0	8.0	
		22							NON-SKID			
		23										
	VENT DUCTS	24	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		25	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		26										
	CLEANING GEAR LOCKER	27										
	FRS 164 TO 166 - SUN DECK - PORT SIDE	28										
	OVERHEAD	29	14	2	ZINC CHROMATE	3.5						
		30										
	BOUNDING STEEL BHDS	31	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		32							ENAMEL-WHITE			
		33										
	SHEET METAL COVERING ON OVERHEAD	34	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		35	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		36										

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. H-4650-161-00-01

FRAME 35 OF 38

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. H-4650-161-00-01

FRAME 36 OF 38

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3

SHEET 62

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - SUN DECK)	1										
	CLEANING GEAR LOCKER (CONT'D)	2										
19th	DECK (TERRAZZO)	3	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		4										
	JOINER DOOR	5										BY JOINER CONTR
		6										
	VENT DUCTS	7	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		8	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		9										
	LINEN LOCKER	10										
	FRS 166 TO 168 - SUN DECK - PORT SIDE	11										
	OVERHEAD, AFT & OUT'BD BOUNDING	12	14	2	ZINC CHROMATE	3.5						
	STEEL BHDS	13										
		14										
	INB'D & FWD BOUNDING STEEL BHDS	15	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		16							ENAMEL-WHITE			
		17										
	DECK	18					4	1	EPOXY-GRAY	4.0		
		19					5	1	EPOXY-RED	4.0	8.0	
		20										
	JOINER DOOR	21										BY JOINER CONTR
		22										
	VENT DUCTS	23	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		24	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		25										
	RADAR MAST ENCLOSURE	26										
	FRS 166 TO 168 - SUN DECK - PORT SIDE	27										
	FWD & OUT'D BOUNDING STEEL BHDS	28	14	2	ZINC CHROMATE	3.5						
		29										
	AFT & INB'D BOUNDING STEEL BHDS	30	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		31							ENAMEL-WHITE			
		32										
	DECK	33						4	EPOXY-GRAY	4.0		
		34						9	EPOXY-RED	4.0	8.0	
		35							NON-SKID			
		36										

HULL NO 4650-51

PAINT SCHEDULE

JOB NO 161-3

SHEET 63

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - SUN DECK)	1										
	RADAR ROOM	2										
	FRS. 164 TO 168 - SUN DECK - PORT SIDE	3										
	OVERHEAD, FWD, AFT & OUT'BD BOUNDING	4	14	2	ZINC CHROMATE	3.5						
	STEEL BHDS	5										
		6										
	BOUNDING STEEL BHDS RAAR MAST	7	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
	ENCLOSURE	8							ENAMEL-WHITE			
		9										
19th	DECK (VINYL)	10	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		11										
	JOINER DOOR	12										BY JOINER CONTR
		13										
	VENT DUCTS	14	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		15	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		16										
	BATTERY LOCKER	17										
	FRS 162 TO 164 - SUN DECK - PORT SIDE	18										
	OVERHEAD, AFT & OUT'BD BOUNDING	19	14	2	ZINC CHROMATE	3.5						
	STEEL BHDS	20										
		21										
	INSULATION BOARD ON OVERHEAD,	22					26	2	FIRE RETARDANT	3.5		
	AFT & OUT'BD BOUNDING STEEL BHDS	23							WHITE			
		24										
	FWD & INB'D BOUNDING STEEL BHDS	25	14	2	ZINC CHROMATE	3.0	26	2	FIRE RETARDANT	3.5	6.5	
	& STEEL DOOR	26							WHITE			
		27										
	DECK	28	14	2	ZINC CHROMATE	3.0	15	2	GRAY	3.5	6.5	
		29										
	VENT DUCTS (EXTERIORS & INTERIORS)	30	19	1	PRE-TREATMENT	.5	26	2	FIRE RETARDANT	3.5	7.0	
		31	14	1	ZINC CHROMATE	3.0			WHITE			
		32										
		33										
		34										
		35										
		36										

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HULL NO 4650-51	PAINT SCHEDULE										JOB NO 161- 3	SHEET 64
ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - SUN DECK)	1										
	STAIRWELL ENCLOSURE	2										
	FRS 168 TO 170 - SUN DECK - ℄	3										
	OVERHEAD, BOUNDING STEEL BHDS	4	14	2	ZINC CHROMATE	3.5						
		5										
19^{12}	DECK (VINYL)	6	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		7										
	JOINER DOORS	8										BY JOINER CONTR
		9										
	FAN ROOM	10										
	FRS 168 TO 177 - SUN DECK - P/S	11										
	OVERHEAD & BOUNDING STEEL BHDS,	12	14	2	ZINC CHROMATE	3.5						
	EXCEPT APPROX 10'-0" OF FWD BOUNDING	13										
	STEEL BHD, PORT SIDE ONLY	14										
		15										
	PLENUM BHDS, FWD, PORT & STBD SIDES	16	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.0	5.0	
	OF EMERG. GEN. RM, FWD BHD OF AFT	17							ENAMEL-WHITE			
	BATTERY ROOM, APPROX 10'-0" OF	18										
	FWD BOUNDING STEEL BHD, PORT	19										
	SIDE ONLY & STEEL DOOR	20										
		21										
	SHEET METAL COVERING ON OVERHEAD &	22	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
	BOUNDING STEEL BHDS	23	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		24										
	JOINER DOOR	25										BY JOINER CONTR
		26										
	DECK	27					4	1	EPOXY-GRAY	4.0		
		28					9	1	EPOXY-RED	4.0	8.0	
		29							NON-SKID			
		30										
	VENT DUCTS	31	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		32	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		33										
		34										
		35										
		36										

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HULL NO 4650-51	PAINT SCHEDULE										JOB NO 161- 3	SHEET 65
ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - SUN DECK)	1										
	EMERGENCY GENERATOR ROOM	2										
	FRS 172 TO 178 - SUN DECK - ℄	3										
	OVERHEAD & BOUNDING STEEL BHDS	4	14	2	ZINC CHROMATE	3.5						
		5										
	SHEET METAL COVERING ON OVERHEAD	6	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
	& BOUNDING STEEL BHDS	7	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		8										
	STEEL DOOR	9	14	2	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
		10							ENAMEL-WHITE			
		11										
	DECK	12					4	1	EPOXY-GRAY	4.0		
		13					9	1	EPOXY-RED	4.0	8.0	
		14							NON-SKID			
	VENT DUCTS	15	19	1	PRE TREATMENT	.5	25	2	SEMI-GLOSS	3.0	5.0	
		16	14	1	ZINC CHROMATE	1.5			ENAMEL-WHITE			
		17										
	BATTERY ROOM	18										
	FRS 177 TO 178 - SUN DECK - STBD SIDE	19										
	OVERHEAD & BOUNDING STEEL BHDS	20	14	2	ZINC CHROMATE	3.5						
		21										
	BOUNDING STEEL BHDS & STEEL DOOR	22	14	2	ZINC CHROMATE	3.0	26	2	FIRE RETARDANT	3.5	6.5	
		23							WHITE			
	SHEET METAL COVERING ON OVERHEAD	24	19	1	PRE TREATMENT	.5	26	2	FIRE RETARDANT	3.5	6.5	
		25	14	1	ZINC CHROMATE	3.0			WHITE			
		26										
	DECK	27	14	2	ZINC CHROMATE	3.0	15	2	GRAY	3.5	6.5	
		28										
	VENT DUCTS (EXTERIOR & INTERIOR)	29	19	1	PRE TREATMENT	.5	26	2	FIRE RETARDANT	3.5	7.0	
		30	14	1	ZINC CHROMATE	3.0			WHITE			
		31										
		32										
		33										
		34										
		35										
		36										

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. H-4650-161-00-01

FRAME 37 OF 38

5C

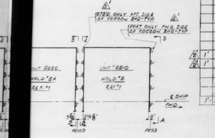
HULL NO 4650-51

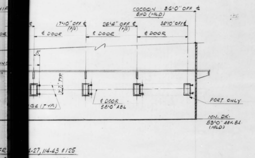
PAINT SCHEDULE

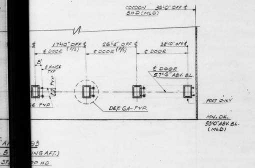
JOB NO 161-3 **SHEET** 66

ALT NO	LOCATION	LINE NO	PRIMERS				FINISH				TOTAL MDFT	REMARKS
			PAINT NO	NO COATS	TYPE	MDFT	PAINT NO	NO COATS	COLOR	MDFT		
	INTERIOR (MIDSHIP HOUSE - BRIDGE DECK)	1										
	WHEELHOUSE & CHART ROOM	2										
	FRS 158 TO 173 - BRIDGE DECK - P/S	3										
	OVERHEAD & BOUNDING STEEL BHDS	4	14	2	ZINC CHROMATE	3.5						
		5										
19^{20}	DECK (VINYL)	6	~~14~~	~~1~~	~~ZINC CHROMATE~~	~~1.5~~						BY DECK COVERING CONTR
		7										
	JOINER DOORS	8										BY JOINER CONTR
		9										
	VENT DUCTS	10	19	1	PRE TREATMENT	.5						
		11	14	2	ZINC CHROMATE	3.5						
		12										
	EMERGENCY GEAR LOCKER	13										
	FRS 172 TO 173 - BRIDGE DECK - ℄	14										
	OVERHEAD, BOUNDING STEEL BHDS &	15	14	1	ZINC CHROMATE	1.5	25	2	SEMI-GLOSS	3.5	5.0	
	STEEL DOOR	16							ENAMEL-WHITE			
		17										
	DECK	18					4	1	EPOXY-GRAY	4.0	8.0	
		19					5	1	EPOXY-RED	4.0		
		20										
		21										
		22										
		23										
		24										
		25										
		26										
		27										
		28										
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910
Oct 1980 6X
BUILDERS PLAN NO. H-4650-161-00-01
FRAME 38 OF 38


STB'D ONLY AFT. SIDE OF COCOON BHD-TYP
PORT ONLY FWD SIDE OF COCOON BHD-TYP
UNIT 9520
HOLD 5A
REF. 1
UNIT 9510
HOLD 5
REF 1
℄ SHIP
FWD.
FR109
FR93
A


COCOON 36'-0" OFF ℄ BHD (MLD)
17'-0" OFF ℄ (P/S)
26'-4" OFF ℄ (P/S)
34'-10" OFF ℄
℄ DOOR
℄ DOOR
℄ DOOR
8'
2'-2" TYP
GE (TYP)
℄ DOOR 58'-0" ABL
PORT ONLY
MN. DK. 53'-0" ABV. B.L. (MLD)
FR 114.27, 114.43 & 125
(LOOKING AFT.)
OPP. HD.


COCOON 32'-0" OFF ℄ BHD (MLD)
17'-0" OFF ℄ (P/S)
26'-4" OFF ℄ (P/S)
34'-10" OFF ℄
℄ DOOR
℄ DOOR
℄ DOOR
℄ HINGE TYP
8'
℄ DOOR 57'-6" ABV. BL
SE TYP
DET. GA-TYP.
PORT ONLY
MN. DK. 53'-0" ABV. BL. (MLD)
F AFT 93
5 (LOOKING AFT.)
ST OPP HD

BILL OF MATERIAL ~ PER SHIP

REV.	ITEM	QTY.	DESCRIPTION	MATERIAL	MATERIAL SPECS	PATTERN	REMARKS	DET NO.	REQN. NO.
	1	288	1/4" DIA. ROD × 2" LG.	STEEL	ASTM A36			GA	UAO
	2	288	1/4" DIA. EYE BOLTS × 3" LONG	BRONZE	VENDORS STD.		DOVER SUPPLY OR EQUAL D-2307		500110-FD
	3	288	BUTTER FLY NUT. FOR 1/4" DIA. EYE BOLT	BRONZE	VENDORS STD.		DO		
	4	672	1/8" DIA. COTTER PIN × 3/4" LG	BRONZE	COMMERCIAL				
	5	192	5/16" DIA. ROD × 2" LG.	STEEL	ASTM A36				UAO
	6	384	F.B. 1 1/2" × 3/16" × 4 3/8" LG.	STEEL	ASTM A36				UAO
	7	384	WASHERS 7/8" O.D. × 3/8" DIA. HOLE × 1/16" THK.	GALV. STEEL	COMMERCIAL				SUPPLY
	8	288	F.B. 1 1/2" × 3/16" × 5 1/2" LG.	STEEL	ASTM A36				UAO
	9	96	F.B. 1" × 1/8" × 8 3/4" LG.	STEEL	ASTM A36				UAO
	10	96	F.B. 1 1/2" × 3/16" × 1'-10" LG.	STEEL	ASTM A36				UAO
2 1'	11	96	8.168# PLT. 18" WIDE × 24" LG	STEEL	ABS GR. A				*
2 1'	12	192	8.168# PLT 13" WIDE × 7" LG	STEEL	ABS. GR. A				*
	13	2	16 GA. SHEET. 48" WIDE × 8'-0" LG.	STAINLESS STEEL	ASTM-A 240 TYPE 304		CUT TO SUIT FOR UNITS 951 THRU 956		500113-Y
	14	5	ADHESIVE SCOTCH GRIP CONTACT CEMENT #1357				5 - 1QT CANS.		500066-A
	15	96	PHELPS CO. "P" TYPE, STYLE #242 WITH 1" ⌀ BULB × 1 3/8" WIDE (NYLON JACKET)	NEOPRENE	ASTM D-1056-68 SCE-42		APPROX. 5'-9" OF GASKET PER DOOR		500137-AD
1'	16	2500	BUTTON HD. BLIND RIVETS 1/8" DIA. × .357" LGTH. (ABT 3/8" LG)	STAINLESS STEEL	SS44SSB		RIVCO OR EQUAL	GA	500115-A

* ITM. 11 & 12 ORDERED ON B/P 951-3, 952-1, 953-Y, 954-1, 955-Y, & 956-1.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	4/4/78	2	1. IN B/M ITEM #11 & 12 CHANGED FROM 14 GA TO 10 GA., ALSO ITEM # 16 CHANGED FROM .296 LGTH TO .357 LGTH.	AP	A
		5, 6 7	2. AT DET GA INDICATED CHANGE IN GA. OF SHEET STEEL FROM 14 GA TO 10 GA PER ABS LETTER DATED 3/13/78		JdM 4/13/78
2	5/3/78	2, 6	1. IN B/M ITEMS # 11 & 12 & IN DET. GA, 10 GA SHEET REVISED TO 8.168# PLT. (MA). - TO SUIT ABS LETTER DATED 27 APR. 1978		JdM 5/4/78
3	1/19/79	3, 4, 5	1. RELOCATED DOORS IN KEY PLAN & ALSO INDICATED THESE CHANGES AT SECT. 3A, 3B, 4A, 4B, 5A & 5B	AP	
		6.	2. AT DET GA INDICATED CUT OUT IN COCOON BHD IN RELATION SHIP TO ℄ OF DOOR		JdM
			3. ALL TO SUIT REF 7, WHICH IS ADDED.		1/23/79

A.B.S. 5-3-79
USCG 5-19-79

UNITS THIS SHT.
UNIT 9510
9520
9530
9540
9550
UNIT 9560

UAO - 50556-A

GENERAL NOTES:

1. ALL WELDING TO BE IN ACCORDANCE WITH A.B.S. RULES & REF. #5
2. INTERIOR / EXTERIOR COATINGS TO BE IN ACCORD WITH REF #6.

NO.	PLAN NO.	TITLE
7	H-4650-129-06-11	DETS - STOPS & REMOTE CONTROL (REEFER SPACES)
6	H-4650-161-00-01	PAINTING SCHEDULE
5	H4650-129-00-02	WELDING DETAILS
4	H4650-129-06-29	COCOON DETAILS - HOLDS 5, 5A, 5B, 5C, 6 & 7
3	H4650-129-06-28	COCOONS - HOLDS 5C, 6 & 7 ~ FR 114.27 TO 141
2	H4650-129-06-27	COCOON - HOLD 5B FR 114.11 TO 114.27
1	H4650-129-06-26	COCOONS - HOLD 5 & 5A ~ FR 93 TO M 114.10

REFERENCE PLANS.

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 175

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED
DATE 10 FEBRUARY 1978
DRAWN AP
IN CHARGE Kg
CHECKED J. Boyd
EXAMINED J. L. Muller
REVIEW
APPROVED

PLAN NO. H4650 - 175-00-02
ALT. NO. 3

INSULATED DOORS
REEFER SPACES
ACCESS TO CONTAINER STOP
MECHANISM

APPROVAL LETTERS

HULL	4650/51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	3/6/78				
A.B.S.	3/15/78				
U.S.C.G.	3/27/78				
LLOYD'S R.S.					
U.S.P.H.S.					

	DATE OF ISSUE						
ALTERATION	–	–	1	1	2	2	3
ENGINEERING DISTRIBUTION	2/14/78	2/28/78	4/7/78	4/12/78	5/5/78	5/9/78	1/30/79
OWNERS	4		2		2		2
AMERICAN BUREAU	3		3				3
LLOYD'S R.S.							
U.S.M.A.							
U.S. NAVY							
U.S.C.G.	2		2				2
JOINER CONT'R.							
USPH	3		3				3
OWNER'S INSP.	1		1	1	1		
AM. BU. INSP.				1		1	1
LLOYD'S INSP.							
U.S.M.A. INSP.			1	1	1		
U.S. NAVY INSP.							
U.S.C.G. INSP.				1		1	1
HULL DRAFT.-21		1P		1		1	1
MACH. DRAFT.-22		2P		2		2	2
ELEC. DRAFT.-23		1P		1		1	1
OUTFIT. DRAFT.-25							
ESTIMATING							
21-1 DWR Wood		1P		1		1	1
PRODUCTION (SCD)							
ORDER DEPT.							
JOINER CON'T YARD							
C.D. SCHAUB				1		1	1
TOTAL ENG'R. DIST.	13	5	12	10	4	8	18
YARD DISTRIBUTION	2/14/78	2/28/78	4/19/78	5/2/78	1/31/79		
URO-OFFICE			1	1	1		
P McNAIR	2P		1	1	1		
PIECE RATE - 11		1P	1	1	1		
TEST DEPARTMENT							
SHIP SUPT			1	1	1		
PLANNING		1P	1	1	1		
GROUND ASSEMBLY			4	4	4		
35 DEPT.			2	2	2		
H. LEVY			1	1	1		
QUALITY ASSURANCE			1	1	1		
NO. WAY							
NO. WAY							
NO. WAY							
NO. WAY							
STRUCT. SUPER.			2	2	2		
OPTICAL DETAIL-46		2P	2	2	2		
WET DOCK							
PIPE SHOP - 52							
OUTFIT. #1 PIER			1	1	1		
PIPE SHOP - 52			2	2	2		
BOILER SHOP - 56			2	2	2		
OUTSIDE MACH. - 60			2	2	2		
Q-MAT'L			1	1	1		
ELECTRIC SHOP - 70			1	1	1		
SHEET MET. SHOP - 74			1	1	1		
COPPER SHOP - 81							
PAINT SHOP - 78			1	1	1		
WELDING							
MOLD LOFT - 41			1	1	1		
BRACKET SHOP							
TOTAL YARD DIST.	2	4	29	29	29		

4650-51-ALT. 1
4650-51-ALT. 2
4650-51-ALT. 3

H-447

SCHED. PREL. ISS. 8/4/8

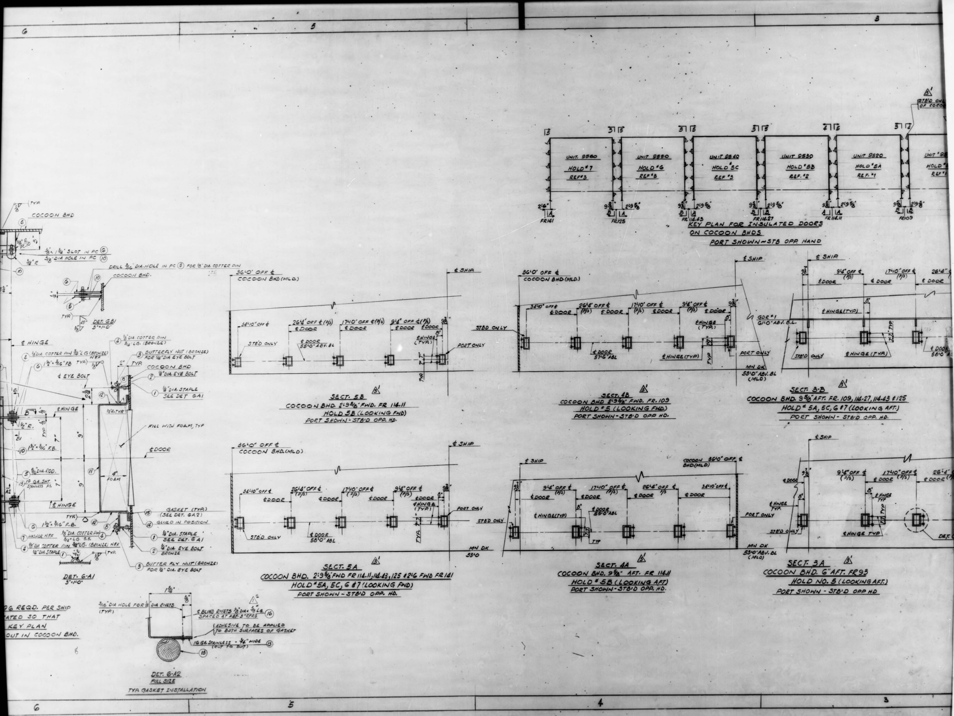
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-175-00-02

Sep 1980

8X

FRAME 1 OF 3



KEY PLAN FOR INSULATED DOORS ON COCOON BHDS
PORT SHOWN ~ STB OPP. HAND
UNIT 9560 HOLD #7 REF #3
UNIT 9550 HOLD #6 REF #3
UNIT 9540 HOLD #5C REF #3
UNIT 9530 HOLD #5B REF #2
UNIT 9520 HOLD #5A REF #1
FR141
FR125
FR114.43
FR114.27
FR114.11
FR109
SECT. 5B
COCOON BHD. 2'-9 5/8" FWD. FR 114.11
HOLD 5B (LOOKING FWD)
PORT SHOWN - STB'D OPP. HD.
SECT. 4B
COCOON BHD 2'-9 5/8" FWD. FR. 109
HOLD # 5 (LOOKING FWD)
PORT SHOWN - STB'D OPP. HD.
SECT. 3-B
COCOON BHD. 9 5/8" AFT. FR. 109, 114.27, 114.43 & 125
HOLD # 5A, 5C, 6 & 7 (LOOKING AFT.)
PORT SHOWN - STB'D OPP. HD.
SECT. 5A
COCOON BHD. 2'-9 5/8" FWD FR 114.11, 114.43, 125 & 2'-6 FWD FR 141
HOLD # 5A, 5C, 6 & 7 (LOOKING FWD)
PORT SHOWN - STB'D OPP. HD.
SECT. 4A
COCOON BHD. 9 5/8" AFT. FR 114.11
HOLD # 5B (LOOKING AFT)
PORT SHOWN - STB'D OPP. HD.
SECT. 3A
COCOON BHD. 6" AFT. FR 93
HOLD NO. 5 (LOOKING AFT.)
PORT SHOWN - STB'D OPP HD
36'-0" OFF ℄ COCOON BHD (MLD)
34'-10" OFF ℄
26'-4" OFF ℄
17'-0" OFF ℄
9'-4" OFF ℄
℄ DOOR
℄ HINGE (TYP)
℄ SHIP
STB'D ONLY
PORT ONLY
58'-0" ABV. BL
MN DK 53'-0" ABV. BL (MLD)
DET. 6B1 3"=1'-0"
DET. 6-A1 3"=1'-0"
DET. 6-A2 FULL SIZE
TYP GASKET INSTALLATION
COCOON BHD
FILL WITH FOAM, TYP
GASKET (TYP.) (SEE DET. 6A2)
GLUED IN POSITION
1/4" DIA. STAPLE SEE DET. 6A1
1/4" DIA. EYE BOLT BRONZE
BUTTER FLY NUT (BRONZE) FOR 1/4" DIA. EYE BOLT
1/8" DIA. COTTER PIN 3/4" LG. (BRONZE)
DRILL 3/16" DIA. HOLE IN PC 5 FOR 1/8" DIA COTTER PIN
3/16" DIA HOLE FOR 1/8" DIA RIVETS (TYP)
℄ BLIND RIVETS 1/8" DIA × 1/2" LG. SPACED AT ABT. 3" CTRS
ADHESIVE TO BE APPLIED TO BOTH SURFACES OF GASKET
16 GA. STAINLESS - 1/4" WIDE (CUT TO SUIT)
..G REQD. PER SHIP
..ATED SO THAT
KEY PLAN
OUT IN COCOON BHD.
6
5
4
3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-175-00-02

Sep 1980

8X

FRAME 2 OF 3

49957 (Rev.A 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW
4. AWS. A 5.1.69	7024	CWE 105 SMAW (Gravity) CWE 101 SMAW
5. AWS. A 5.5.69	8018C3	CWE 105 SMAW (Gravity) CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C-25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860-0 Flux)		CWE 301 SAW (Single) CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

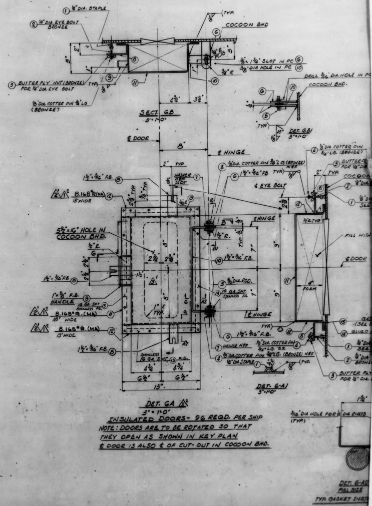
I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A-514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3


① 1/4" DIA. STAPLE
② 1/4" DIA. EYE BOLT BRONZE
③ BUTTER FLY NUT (BRONZE) FOR 1/4" DIA. EYE BOLT
1/8" DIA. COTTER PIN 3/4" LG (BRONZE)
TYP.
1/8
COCOON BHD
3/4" R PC.10
3/8" x 1 3/4" SLOT IN PC ⑥
3/8" DIA HOLE IN PC ⑩
3/4" R
5"
2"
1"
4 3/4"
3 1/4"
SECT. 6B
3" = 1'-0"
DRILL 3/16" DIA. HOLE IN PC
COCOON BHD.
45°
DET. 6B1
3" = 1'-0"
℄ DOOR
8"
℄ HINGE
2" TYP
1 1/2" x 3/16" F.B. ⑧
WASHER NFF SLOT ⑦
8.168# ℞ (MA) ⑫ 13" WIDE
2 3/4" TYP
3/16" TYP
3/16" R
④ 1/8" DIA. COTTER PIN 3/4" LG (BRONZE) NFF
⑥ 1 1/2" x 3/16" FB
℄ EYE BOLT
5 1/2" x 16" HOLE IN COCOON BHD.
1/2" R.
2 3/4"
8"
1 1/2"
1 1/2" x 3/16" F.B. ⑧
1" x 1/8" F.B. HANDLE ⑨
16 GA. SHT STAINLESS F.S. ⑬
8.168# ℞ (MA) ⑪ 18" WIDE
8.168# ℞ (MA) ⑫ 13" WIDE
1" R TYP.
STAINLESS 16 GA. SHT. ⑬ F.S.
4 3/4"
6 1/2"
13".
℄ HINGE
1/2" R.
TYP
⑩ 1 1/2" x 3/16" F.B.
⑤ 5/16" DIA. ROD.
⑬ 16 GA. SHT. STAINLESS F.S.
7"
9"
⑥ 1 1/2" x 3/16" F.B.
⑦ WASHER NFF
1/8" DIA. COTTER PIN 3/4" LG. S.S. ④
④ 1/8" DIA. COTTER PIN 3/4" LG. (BRONZE) NFF
1/4" DIA. STAPLE ①
DET. 6-A1
3" = 1'-0"
④ 1/8" DIA. COTTER PIN 3/4" LG. (BRONZE)
③ BUTTERF… FOR 1/4" DIA…
COCOON…
⑫
1/2" R. TYP
FILL WITH…
℄ DOOR
4" FOAM
⑮ GAS… (SEE D…
⑭ GLUED…
① 1/4" DIA… SEE…
② 1/4" DIA… BRONZ…
③ BUTTER FLY… FOR 1/4" DIA…
1 3/4"
3/16" DIA HOLE FOR 1/8" DIA RIVETS (TYP)
DET. 6-A2 FULL SIZE
TYP. GASKET INST…

DET. 6A 3
3" = 1'-0"

INSULATED DOORS- 96 REQD. PER SHIP

NOTE: DOORS ARE TO BE ROTATED SO THAT
THEY OPEN AS SHOWN IN KEY PLAN
℄ DOOR IS ALSO ℄ OF CUT-OUT IN COCOON BHD.

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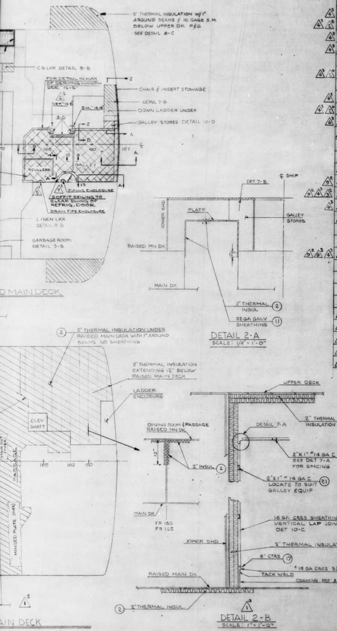
BUILDERS PLAN NO. H-4650-175-00-02

FRAME 3 OF 3


3" THERMAL INSULATION W/1" AROUND BEAMS & 16 GAGE S.M. BELOW UPPER DK P&S SEE DETAIL 8-C
CG LKR DETAIL 8-B
FOR DETAIL IN WAY OF SERVING WINDOW SEE "12-C"
CHAIR & INSERT STOWAGE
DET. "14-B"
SIM. "14-B"
8-D
DETAIL 7-B
DOWN LADDER UNDER
GALLEY STORES DETAIL 12-D
170
165
160
157
"14"
10
7
GALLEY
SCULLERY
"A"
13
PIPING ENCLOSURE
SOFFIT CEILING TO CLEAR SWING OF REFRIG. DOOR
DRAIN PIPE ENCLOSURE
LINEN LKR DETAIL 8-B
GARBAGE ROOM DETAIL 9-B
ED MAIN DECK
DET 7-B
℄ SHIP
PLATE
JOINER BHD
GALLEY STORES
RAISED MN DK
12"
MAIN DK
2" THERMAL INSUL ②
22 GA GALV SHEATHING ⑪
② 2" THERMAL INSULATION UNDER RAISED MAIN DECK WITH 1" AROUND BEAMS NO SHEATHING
2" THERMAL INSULATION EXTENDING 12" BELOW RAISED MAIN DECK
LADDER ENCLOSURE
ELEV SHAFT
STAIR CUT (OVER)
PASSAGE
HINGED PLATE (OVER)
165
162
160
UPPER DECK
2" THERMAL INSULATION ②
DETAIL 7-A
DINING ROOM & PASSAGE RAISED MN DK
2" INSUL ②
2"X1" #14 GA [SEE DET 7-A FOR SPACING
2"X1" #14 GA [LOCATE TO SUIT GALLEY EQUIP ㉑
MAIN DK
FR 160
FR 165
16 GA CRES SHEATHING VERTICAL LAP JOINTS DET 10-C ⑮
JOINER BHD
2" THERMAL INSULATION ②
6" CTRS ⑰
#14 GA CRES 3½"X1" ㉒
TACK WELD
COAMING REF 3
RAISED MAIN DK
② 2" THERMAL INSUL.
AIN DECK

DETAIL 2-A
SCALE: 1/4" = 1'-0"

DETAIL 2-B
SCALE: 1" = 1'-0"

BILL OF MATERIAL (PER SHIP)

REV	ITEM	QUAN.	DESRIPTION	MATERIAL	MATL SPEC	REMARKS	JOB NO	REQ'N NO.
$\triangle 4^{3}$ $\triangle 2^{8}$	1	5,250 SQFT	1" THERMAL INSULATION	FIBROUS GLASS	MA NO. 32-MA3	U.S.C.G. APP'L. N° 164.009/72/3	500063-F	500063-C
$\triangle 4^{3}$ $\triangle 2^{8}$ $\triangle 1^{4}$	2	9,900 SQFT	2" THERMAL INSULATION	FIBROUS GLASS	MA NO 32-MA3	↓	500063-F	↓
$\triangle 4^{5}$ $\triangle 2^{8}$	3	2375 SQFT	2" INSULATION	NAVY HULL BOARD	MIL-I-742 TYPE II	↓ 164.009/92/0	500063-F	
$\triangle 4^{5}$ $\triangle 2^{8}$	4	2380 SQFT	2" ACOUSTICAL INSULATION	NAVY HULLBOARD	MIL-A-23054			↓
$\triangle 4^{3}$	5	3087	WELDING PIN 1½" LONG	MILD STEEL CADMIUM PLATED	COMM	NELSON TYPE, 10 GAGE	500064-D	500064
$\triangle 4^{3}$ $\triangle 2^{6}$ $\triangle 1^{4}$	6	6,250	WELDING PIN 2½" LONG	↓	↓	↓	500064-D	↓
	7	1231	WELDING PIN 3½" LONG	↓	↓	↓		↓
$\triangle 4^{3}$ $\triangle 2^{6}$	8	4,452	WELDING PIN 4½" LONG	↓	↓	↓	500064-D	500064 500064-B
$\triangle 4^{3}$ $\triangle 2^{6}$ $\triangle 1^{4}$	9	15,025	SPEED CLIPS 2½" DIA.	CADMIUM PL STEEL	COMM	FOR ITEMS 5,6,7 & 8	500064-D	500064
$\triangle 6^{3}$ $\triangle 3^{2}$	10	132	16 GA SHEET	GALV. STEEL	ASTM 525	48"X96"		PG.928-B
$\triangle 4^{3}$	11	88	22 GA SHEET	↓	↓	48"X96"		PG. 928
$\triangle 2^{6}$	12	79	16 GA SHEET			48"x96" PERFORATED (.095" ϕ HOLES - 33 HOLES/SQ.IN. STAGGERED)		500103-T 500103-BG
$\triangle 2^{6}$	13	29	22 GA SHEET	↓	↓	↓		↓
$\triangle 8^{3}$	14	19	18 GA SHEET	CRES	COMM	AISI TYPE 302 #4 FINISH 1 SIDE 48" X 96"		500103-T 500103-AY
$\triangle 9^{2}$ $\triangle 8^{3}$	15	43	16 GA SHEET	CRES	COMM	AISI TYPE 302 #4 FINISH 1 SIDE 48" X 96"	500103-BC	↓
$\triangle 9^{2}$ $\triangle 4^{3}$ $\triangle 3^{2}$ $\triangle 2^{6}$	16	13,780	SHEET METAL SCREWS	CADMIUM PL STEEL TYPE "F"	COMM	# 10-24 X ½" SLOTTED TRUSS HEAD SELF TAPPING	500064-K 500064-E	500064-B 500064-A 500064-C
$\triangle 6^{3}$ $\triangle 1^{4}$	17	5,600	SHEET METAL SCREWS	STAINLESS STEEL	COMM	#8-32 x ½" SLOTTED TRUSS HEAD - SELF TAPPING (TYPE 410)		500064-G 500064-A
$\triangle 2^{6}$	18	19	3"X¼" F.B. 20'-0" LG	STEEL	(MA)			PG 928
	19	3	5"X¼" F.B. 20'-0" LG	STEEL	(MA)			PG 928
	20	1	10.21 PLATE 8'-0" LG	STEEL	(MA)	48"x120" CUT CMGS.		PG 928
$\triangle 9^{2}$ $\triangle 6^{3}$ $\triangle 4^{3}$ $\triangle 2^{6}$	21	74	14 GA SHEET	GALV.	ASTM 525	48"X120", FURRING		PG. 928
	22	2	14 GA SHEET	CRES	COMM	48"X120" AISI TYPE 302 #4 FINISH 1 SIDE		500103-T
	23	AS REQ'D	SEALING COMPOUND	POLYSULFIDE	COMM	PHIL. RESINS JOINT SEALANT PRO 30 SC		
	24	3	6"X¼"FB 20'-0" LG	STEEL	(MA)			PG. 928
	25	2	1½"x¼ FB 15'-0" LG	STEEL	(MA)			PG 928
$\triangle 2^{6}$	26	80	INSULATION - 4"THK.x24"x48"	MINERAL WOOL	U.S.C.G. APP'L. N° 164.007/1/0	FORTY EIGHT INSULATIONS INC. TYPE 48 C.G. FELT - 6# DENSITY		500063-E
$\triangle 2^{6}$	27	15	INSULATION - 2"THK.x24"x48"	MINERAL WOOL	U.S.C.G. APP'L. N° 164.007/1/0	↓		500063-E
$\triangle 4^{4}$	28	290 SQ.FT	1"THK. SPRAYED INSUL.	POLYURETHANE FOAM 3#/CU.FT. DENSITY		UNITED FOAM CORP. UFC-250-3 OR EQ.		500120-A
$\triangle 4^{4}$	29	290 SQ.FT	15 MILS MIN. DFT TOPCOAT	ELASTOMER		PRC-1539-US OR EQUAL		500120A
$\triangle 4^{5}$	30	200 LIN.FT	FOIL - 36" WIDE x .002" THK.	ALUMINUM				500103-AR

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	1/3/78	1&2	1) ADDED REF. #5 & GEN. NOTE #12 FOR JOINER INSULATION.	RLW	JLM
		3	2) IN PLAN OF MAIN DK. EXTENDED INSULATION UNDER RAISED MAIN DECK IN WAY OF PASSAGEWAY ABOVE FROM FR. 162-170 P/S. ABV. ALTERATIONS 1¹ & 1² IN ACCORDANCE WITH G. SHARP APP'L. LETTERS DATED 12-7-77.		
		1,2 7,9 10	3) IN GALLEY, SCULLERY & PICK-UP AREA REVISED TYPE OF SHEATHING CONNECTIONS FROM BUTT TO LAP JOINTS. DET. "10-C" MODIFIED & DETAILS "2-B", "7-A", "9-F" & GEN. NOTE NOS 6 & 9 ALTERED TO SUIT. ABV. IN ACCORDANCE WITH DEPARTURE NO 057.		
		1,2	4) IN B/M REVISED QUANTITIES AS FOLLOWS TO SUIT ABOVE ALTERATIONS 1² & 1³ ITEM NO 2 INCREASED FROM 7500 TO 8000 NO 6 ↓ 3703 TO 4200 NO 9 ↓ 10,433 TO 10,935 NO 17 DECREASED ↓ 4300 TO 3200		
2	5/31/78	12 11	1) DETAIL "12-C" REVISED TO SUIT LATEST JOINER CONT'R. DWG. & ELEV. OF SERVING WINDOW FRAME IN GALLEY & SCULLERY DELETED TO SUIT.	RLW	JLM
		2,14	2) ADDED CRES. JAMBS IN WAY OF ROLL-UP SHUTTER AT DRESSER IN PICK UP AREA ON MAIN DECK. DETAILS "14-B" & "14-C" ADDED TO SUIT.		
		13	3) DETAIL "13-C" REVISED TO AGREE WITH LATEST GAYLORD VENTILATOR DRAWING.		
		3,6	4) IN PLAN OF RAISED MAIN DECK INDICATED RECESS IN SHEATHING TO ACCOMMODATE VACUUM BREAKER PIPING IN WAY OF GARBAGE GRINDER IN SCULLERY. DET. "6-A" ADDED TO SUIT.		
		15	5) ADDED CLASS A-60 INSUL. IN WAY OF CO² ROOM ON 2ND DECK. ADDED PLAN VIEWS OF 2ND DK. & OVERH'D. OF 36'-0" FLAT & ADDED DETAILS "15-A", "15-C" & SECT. "15-C".		
		1,2	6) B/M REVISED AS FOLLOWS: ITEM NO 6 INCREASED FROM 4,200 TO 4,350 NO 8 ↓ 3,452 TO 4,152 NO 9 ↓ 10,935 TO 11,785 NO 12 ↓ 69 TO 79 NO 13 ↓ 22 TO 29 NO 16 ↓ 10,000 TO 11,200 NO 18 ↓ 17 TO 19 NO 21 INCREASED FROM 51 TO 56 NOS 26 & 27 ADDED		
		1	7) REVISED TITLE BLOCK TO SUIT ALT. 2⁵		
		1	8) IN B/M ADDED U.S.C.G. APP'L. NOS TO ITEM NOS 1 THRU 4.		
3	9/8/78	16,17	1) ADDED CLOSING COVERS AT ACCESS OPENINGS ON PIPE CHASE IN NO 8 HOLD, FRS. 142-156 P/S. DET. "16-A", ELEV. "17-A", DET. "17-B" & SECT. "17-C" ADDED TO AGREE.	RLW	JLM
		1,2	2) B/M REVISED AS FOLLOWS: ITEM NO 10 INCREASED FROM 88 TO 98 " " 16 " " 11,200 TO 12,200		
			3) TITLE OF DWG. REVISED TO INCLUDE ADDITION TO #8 HOLD ABV. PER 22 DEPT. REQUEST		

CONT'D. ZONE 18

HULL	DESIGN	CHARGE
4651		4651
4650		4650

JOB NO. 176

GENERAL NOTES

1. SCREWS FOR SECURING SHEATHING TO BE SPACED APPROX. 6" CENTERS
2. GENERALLY, VERT. FURRING [ON BHDS. TO BE CONTINUOUS WITH HORIZ. [INTERCOSTAL.
3. ALL FURRING SHALL BE FORMED OF 14 GA GALV. STEEL AND PAINTED IN ACCORDANCE WITH REF 1
4. DIM. SHOWN FOR CEILING HEIGHTS ARE ABOVE FINISHED DECK
5. VERTICAL FURRING ON BHDS TO BE SPACED 24" UNLESS OTHERWISE NOTED.
6. $\triangle 1^{3}$ SHEATHING TO HAVE 1" LAP JOINTS
7. HINGED OR PORTABLE SECTIONS OF SHEATHING WITH QUICK ACTING CATCHES SHALL BE PROVIDED AS NECESSARY FOR FREQUENT ACCESS.
8. STRUCTURE TO BE TREATED IN ACCORDANCE WITH REF 1 PRIOR TO INSTALLING INSULATION & SHEATHING
9. $\triangle 1^{3}$ ALL STAINLESS STEEL SHEATHING IN GALLEY, SCULLERY & PICK-UP AREA SHALL HAVE LAP JOINTS AS SHOWN IN DET. "10-C".
10. SECURING SCREWS & F.B. TRIM SHALL BE STAINLESS STEEL WHEN SECURING STAINLESS STEEL SHEATHING AND OR CEILING.
11. ALL ACCESS PANELS IN GALLEY & SCULLERY SHALL BE STAINLESS STEEL
12. $\triangle 1^{1}$ INSULATION NOT INDICATED ON THIS DWG. WILL BE COVERED ON JOINER DRAWING, REF. #5.

RESERVATIONS

$\triangle 8^{2}$ 1. ~~ALTERATION # $\triangle$⁶ RESERVED~~

UNIT N° 9280

UAO-50597

REFERENCE PLANS

NO.	PLAN NO.	TITLE
$\triangle 1^{1}$ 5	HOPEMAN DWG. #108	JOINER INSUL. - ARR'GT. & DETAILS (2 SHEETS)
4	H 4650-234-00-01	DECK COVERING SCHEDULE
3	H 4650-236-00-03	FOUNDATIONS & COAMINGS COMMISSARY EQUIP
2	H 4650-236-00-01	COMMISSARY SPACES ARRGT MAIN DECK
1	H 4650-161-00-01	PAINTING & CEMENTING

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/8" = 1'0" & AS NOTED — DATE 11-23-77
DRAWN JTB — IN CHARGE RJK
CHECKED RJK — EXAMINED F. G. Mullin
REVIEW — APPROVED R. A. Jacobson

PLAN NO. H-4650-176-00-02 — ALT. NO. 9^{2}

INSULATION & SHEET METAL SHEATHING IN ACCOM. SPACES, CO^{2} ROOM, N° 8 HOLD MACHINERY SPACES

$\triangle 2^{7}$ $\triangle 3^{3}$ $\triangle 6^{4}$

	APPROVAL LETTERS				
HULL	4650 & 51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	12-7-77				
A.B.S.					
U.S.C.G.	11-17-78				
LLOYD'S R.S.					
U.S.P.H.S.	12-5-77				

O.D MARKS
6-30-78

H-448

45 SQ FT

	DATE OF ISSUE																
ALTERATION	—	—															
OWNERS	4		2		2		2		2		2		2	2		2	2
AMERICAN BUREAU																	
LLOYD'S R.S.																	
U.S.M.A.																	
U.S. NAVY																	
U.S.C.G.	3		3		3		3		3		3		3	3		3	3
JOINER CONT'R.							1		1		1		1	1		1	1
USPH	3		3		3		3		3		3		3	3		3	3
OWNER'S INSP.	1		1		1		1		1		1		1	1			
AM. BU. INSP.										1P		1			1	1	1
LLOYD'S INSP.																	
U.S.M.A. INSP.			1		1		1		1		1		1	1			
U.S. NAVY INSP.																	
U.S.C.G. INSP.										1P		1			1	1	1
CO Schupp												1			1	1	1
HULL DRAFT. - 21		1P		1P		1P		1P		1P		1			1	1	1
MACH. DRAFT. - 22		2P		2P		2P		2P		2P		2			2	2	2
ELEC. DRAFT. - 23		1P		1P		1P		1P		1P		1			1	1	1
OUTFIT. DRAFT. - 26																	
ESTIMATING																	
21-IDWRA		1P		1P		1P		1P		1P		1			1	1	1
PRODUCTION (BCD)																	
ORDER DEPT.																	
JOINER CONT. YARD													1	1			
TOTAL ENG'R. DIST.	11	5	10	5	10	5	11	5	11	7	11	8	12	12	8	17	17

YARD DISTRIBUTION: UAO-OFFICE; PM Nair; PIECE RATE - 11; TEST DEPARTMENT; J. SIMMONS; PLANNING; GROUND ASSEMBLY; 35 DEPT.; H. LEVY; QUALITY ASSURANCE; NO. WAY; NO. WAY; NO. WAY; NO. WAY; STRUCT. SUPER.; OPTICAL DETAIL-46; WET DOCK; PIPE SHOP - 52; OUTFIT. #1 PIER; PIPE DRAFT. - 52; BOILER SHOP - 58; OUTSIDE MACH. - 60; O-MAT'L; ELECTRIC SHOP - 70; SHEET MET. SHOP - 74; COPPER SHOP - 81; PAINT SHOP - 78; WELDING; MOLD LOFT - 41; BRACKET SHOP; Vankov; E BROKUS; R. MILLER

TOTAL YARD DIST. 24 / 5 / 5 / 5

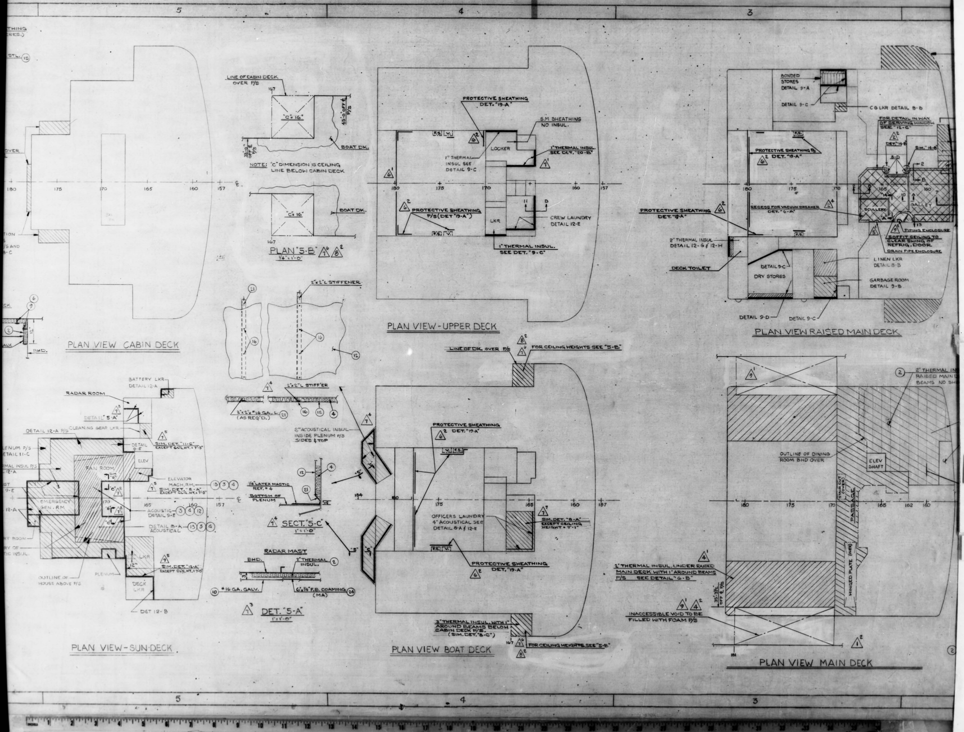
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
1400 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-176-00-02

Sep 1980

8X

FRAME 1 OF 9



5
4
3
PLAN VIEW CABIN DECK
LINE OF CABIN DECK OVER P/S
"C"= 16"
45'-0" OFF ℄ P/S
38'-0" OFF ℄ P/S
BOAT DK.
NOTE: "C" DIMENSION IS CEILING LINE BELOW CABIN DECK
PLAN "5-B" 1/4"=1'-0"
2"x2" L STIFFENER
2"x2"x#14 GA. L (AS REQ'D.)
2"x2" L STIFF'ER
2" ACOUSTICAL INSUL. INSIDE PLENUM P/S SIDES & TOP
1/4" LATEX MASTIC REF. # 4
BOTTOM OF PLENUM
SECT. "5-C" 1"=1'-0"
RADAR MAST
BHD.
2" THERMAL INSUL.
#16 GA. GALV.
6"x1/4" F.B. COAMING (MA)
DET. "5-A" 1"=1'-0"
PLAN VIEW - UPPER DECK
PROTECTIVE SHEATHING DET. "19-A"
S.M. SHEATHING NO INSUL.
LOCKER
1" THERMAL INSUL. SEE DET. "20-B"
1" THERMAL INSUL SEE DETAIL 9-C
PROTECTIVE SHEATHING P/S (DET "19-A")
LKR
CREW LAUNDRY DETAIL 12-E
1" THERMAL INSUL. SEE DET. "9-C"
PLAN VIEW - SUN DECK
RADAR ROOM
BATTERY LKR DETAIL 12-A
DETAIL "5-A"
DETAIL 12-A P/S
CLEANING GEAR LKR
SIM. DET. "11-C" EXCEPT CLG. HT. = 7'-5"
DETAIL 9-E
ELEV
FAN ROOM
ELEVATOR MACH. RM.
SIM. DET. "8-A" EXCEPT CLG. HT. 7'-3"
EMERGENCY GEN. RM.
ACOUSTIC DETAIL 9-E
DETAIL 8-A ACOUSTICAL
LKR
SIM. DET. "13-A" EXCEPT CLG. HT. = 7'-10"
PLENUM
OUTLINE OF HOUSE ABOVE P/S
DECK LKR
DET 12-B
PLAN VIEW BOAT DECK
LINE OF DK. OVER P/S
FOR CEILING HEIGHTS SEE "5-B"
PROTECTIVE SHEATHING DET. "19-A"
OFFICERS LAUNDRY 4" ACOUSTICAL SEE DETAIL 8-A & 12-E
SIM. DET. "8-A" EXCEPT CEILING HEIGHT = 7'-1"
PROTECTIVE SHEATHING DET. "19-A"
3" THERMAL INSUL. WITH 1" AROUND BEAMS BELOW CABIN DECK P/S (SIM. DET. "8-C")
FOR CEILING HEIGHTS SEE "5-B"
PLAN VIEW RAISED MAIN DECK
BONDED STORES DETAIL 9-A
DETAIL 9-C
CG LKR DETAIL 8-B
FOR DETAIL IN WAY OF SERVING WINDOW SEE "12-C"
PROTECTIVE SHEATHING P/S DET. "19-A"
RECESS FOR VACUUM BREAKER DET. "6-A"
SCULLERY
GALLEY
PIPING ENCLOSURE
SOFFIT CEILING TO CLEAR SWING OF REFRIG. DOOR
DRAIN PIPE ENCLOSURE
PROTECTIVE SHEATHING DET. "19-A"
2" THERMAL INSUL DETAIL 12-G & 12-H
DECK TOILET
DETAIL 9-C
DRY STORES
LINEN LKR DETAIL 8-B
GARBAGE ROOM DETAIL 9-B
DETAIL 9-D
DETAIL 9-C
PLAN VIEW MAIN DECK
2" THERMAL INSUL. RAISED MAIN DECK BEAMS NO SH
OUTLINE OF DINING ROOM BHD OVER
ELEV SHAFT
PASSAGE
STAIR CUT (OVER)
HINGED PLATE (OVER)
2" THERMAL INSUL. UNDER RAISED MAIN DECK WITH 1" AROUND BEAMS P/S SEE DETAIL "6-B"
INACCESSIBLE VOID TO BE FILLED WITH FOAM P/S
180
175
170
165
160
157
184
162
181
167

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BUILDERS PLAN NO. H-4650-176-00-02

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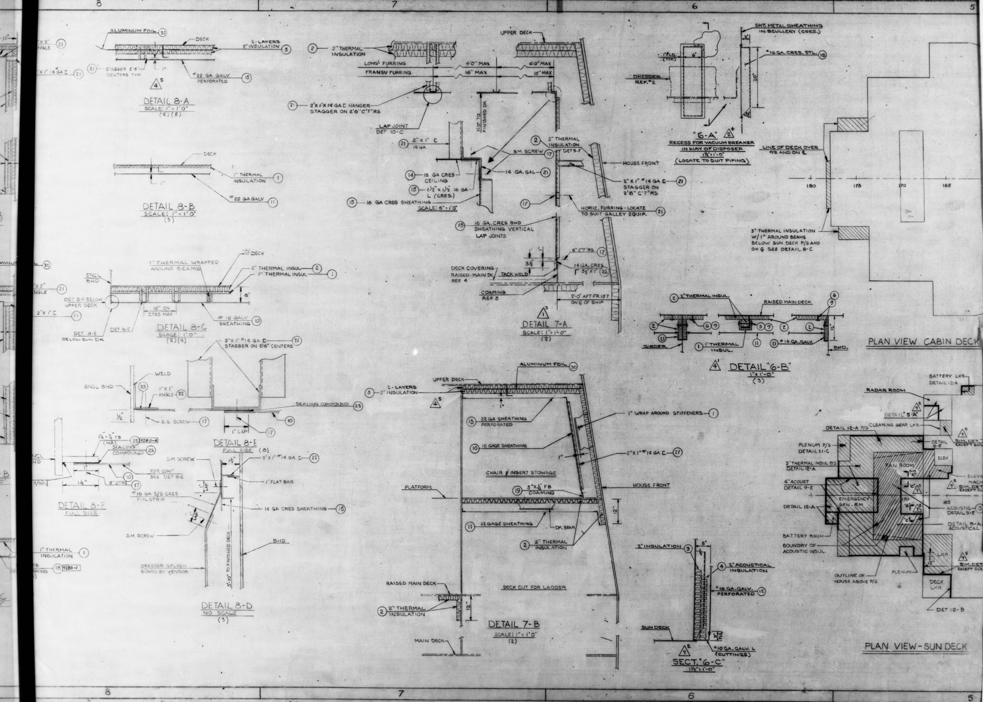
FRAME 2 OF 9


8
7
6
5
ALUMINUM FOIL (30)
DECK
2-LAYERS 2" INSULATION (3)
STAGGER 2'6" CENTERS TYP (21)
#22 GA GALV PERFORATED (13)
DETAIL 8-A
SCALE: 1" = 1'0"
(4) (5)
2" THERMAL INSULATION (2)
LONG'L FURRING 4'0" MAX
TRANSV FURRING 16" MAX
2"x1"x14 GA [HANGER STAGGER ON 2'6" C'T'RS (21)
LAP JOINT DET 10-C
2'-0" TO FINISHED DK
UPPER DECK
2" x 1" [14 GA (21)
SM SCREW (17)
18 GA CRES CEILING (14)
1 1/2" x 1 1/2" 16 GA L (CRES) (15)
14 GA. GAL (21)
16 GA CRES SHEATHING (15)
SCALE: 6" = 1'0"
2" THERMAL INSULATION DET 9-F (2)
HOUSE FRONT
2" x 1" #14 GA [STAGGER ON 2'6" C'T'RS (21)
HORIZ. FURRING - LOCATE TO SUIT GALLEY EQUIP. (21)
16 GA. CRES BHD SHEATHING VERTICAL LAP JOINTS (15)
6" C'T'RS (17)
14 GA. CRES 3 1/2" x 1" (22)
DECK COVERING RAISED MAIN DK REF 4
TACK WELD
COAMING REF 3
2'-0" AFT FR 157 ON ℄ OF SHIP
DETAIL 7-A
SCALE: 1" = 1'-0"
(2)
SHT. METAL SHEATHING IN SCULLERY (CRES.)
#16 GA. CRES. STL. (15)
DRESSER REF. #2
"6-A"
RECESS FOR VACUUM BREAKER IN WAY OF DISPOSER
1 1/2" = 1'-0"
(LOCATE TO SUIT PIPING)
LINE OF DECK OVER P/S AND ON ℄
180
175
170
165
3" THERMAL INSULATION W/ 1" AROUND BEAMS BELOW SUN DECK P/S AND ON ℄ SEE DETAIL 8-C
PLAN VIEW CABIN DECK
DECK
1" THERMAL INSULATION (1)
#22 GA GALV (11)
DETAIL 8-B
SCALE: 1" = 1'0"
(3)
1" THERMAL WRAPPED AROUND BEAMS
DECK
2" THERMAL INSUL (2)
1" THERMAL INSUL (1)
ENCL BHD
DET 8-F BELOW UPPER DECK
16" ON CTRS MAX
#16 GALV SHEATHING (10)
DET 8-E
DET 8-E BELOW SUN DK.
DETAIL 8-C
SCALE: 1'0"
(2) (4)
2" THERMAL INSUL.
RAISED MAIN DECK
GIRDER
1" THERMAL INSUL.
#14 GA. GALV.
BHD.
DETAIL "6-B"
1" = 1'-0"
(3)
2" x 1" #14 GA [STAGGER ON 2'6" CENTERS (21)
WELD
ENCL BHD
1" x 1" ANGLE (22)
S.S. SCREW (17)
SEALING COMPOUND (23)
1" LAP
1/4" x 1/4" FB (MA) (25)
SEALING COMPOUND (26)
8" CTRS (17)
DETAIL 8-F
FULL SIZE
DETAIL 8-E
FULL SIZE (8)
S.M SCREW
2" x 1" #14 GA [(22)
1" FLAT BAR
FOR CONT SEE DET 8-E
#16 GA S/S CRES FIN. STRIP
16 GA CRES SHEATHING (15)
S.M SCREW
3'-10" TO FINISHED DECK
BHD
DRESSER SPLASH BOARD BY VENDOR
1" THERMAL INSULATION (1)
DETAIL 8-D
NO SCALE
(3)
ALUMINUM FOIL (30)
UPPER DECK
2-LAYERS 2" INSULATION (3)
1" WRAP AROUND STIFFENERS (1)
22 GA SHEATHING PERFORATED (13)
16 GAGE SHEATHING (10)
2" x 1" #14 GA [(21)
CHAIR & INSERT STOWAGE
PLATFORM
5" x 1/2" FB COAMING (19)
HOUSE FRONT
22 GAGE SHEATHING (11)
DK BEAM
2" THERMAL INSULATION (2)
RAISED MAIN DECK
2" THERMAL INSULATION (2)
DECK CUT FOR LADDER
DETAIL 7-B
SCALE: 1" = 1'0"
(2)
MAIN DECK
2" INSULATION (3)
2" ACOUSTICAL INSULATION (4)
#16 GA. GALV. PERFORATED (12)
SUN DECK
#10 GA. GALV. L (CUTTINGS)
SECT. "6-C"
1 1/2" = 1'-0"
BATTERY LKR - DETAIL 12-A
RADAR ROOM
DETAIL "S-A"
DETAIL 12-A P/S
CLEANING GEAR LKR.
PLENUM P/S DETAIL 11-C
3" THERMAL INSUL P/S DETAIL 12-A
FAN ROOM
ELEV
4" ACOUST DETAIL 9-E
EMERGENCY GEN. RM
DETAIL 12-A
ACOUSTIC DETAIL 9-E
DETAIL 8-A ACOUSTICAL
BATTERY ROOM
BOUNDRY OF ACOUSTIC INSUL.
OUTLINE OF HOUSE ABOVE P/S
PLENUM
LKR
DECK LKR
SIM. DET. EXCEPT CUL
DET 12-B
PLAN VIEW - SUN DECK

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BUILDERS PLAN NO. H-4650-176-00-02

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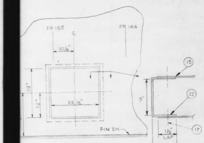
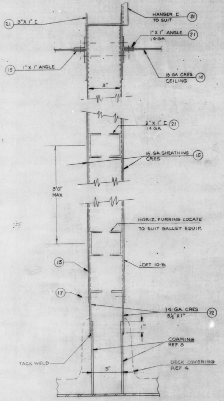
BUILDERS PLAN NO. H-4650-176-00-02

FRAME 4 OF 9

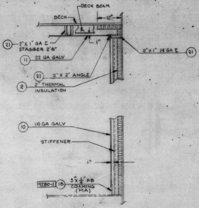

FR 165
℄
FR 164
10 1/4"
24"
12"
24 1/2"
FIN DK
(15)
(22)
(17)
3"
1 1/2" LAP
2"

ELEVATION TRAY SLIDE OPENING IN SCULLERY REF 7

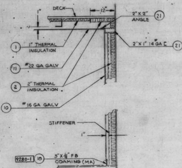
DETAIL 11-A
SCALE: 1"= 1'-0


(21) 3"X 1" ⊏
HANGER ⊏ TO SUIT (21)
1"X 1" ANGLE 14 GA (21)
(15) 1"X 1" ANGLE
18 GA CRES CEILING (14)
3"
2"X 1" ⊏ 14 GA (21)
16 GA SHEATHING CRES (15)
3'0" MAX
HORIZ. FURRING LOCATE TO SUIT GALLEY EQUIP.
(15)
DET 10-B
(17)
14 GA CRES 3 1/2"X 1" (22)
1"
COAMING REF 3
TACK WELD
DECK COVERING REF 4
3"

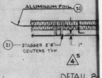
DETAIL 10-A
SCALE: 6" = 1'0"
(3)


DECK BEAM
DECK
12"
(21) 2"X 1" GA ⊏ STAGGER 2'6"
1"
2"X 1" 14 GA ⊏ (21)
(11) 22 GA GALV
(21) 2"X 2" ANGLE
(2) 2" THERMAL INSULATION
(10) 16 GA GALV
STIFFENER
1"
9280-1 (18) 3"X 1/4" FB COAMING (MA)

DETAIL 9-D
SCALE: 1"=1'0"

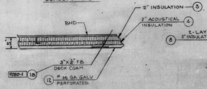

DECK
12"
1"
2"X 2" ANGLE (21)
(1) 1" THERMAL INSULATION
2"X 1" #14 GA ⊏ (21)
(11) #22 GA GALV
(2) 2" THERMAL INSULATION
(10) #16 GA GALV
STIFFENER
1"
9280-1 (18) 3"X 1/4" FB COAMING (MA)

DETAIL 9-A
SCALE: 1"=1'0"

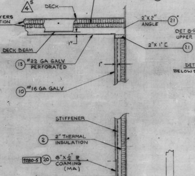

ALUMINUM FOIL (30)
(21) STAGGER 2'6" CENTERS TYP
1"
4 5

DETAIL 8-
SCALE: 1"=1'
(4)(5)

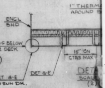
DETAIL 8
SCALE: 1"=
(3)


2" INSULATION (3)
2" ACOUSTICAL INSULATION (4)
BHD
5"
3"X 1/2" FB DECK COAM
9280-1 (18)
(12) #16 GA GALV PERFORATED

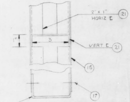
DETAIL 9-E
SCALE: 1"=1'0"
(6)


4 5
(3) 2-LAYERS 2" INSULATION
DECK
ALUMINUM FOIL (30)
2"X 2" ANGLE (21)
DECK BEAM
1"
2"X 1" ⊏ (21)
(13) #22 GA GALV PERFORATED
1"
(10) #16 GA GALV
STIFFENER
(2) 2" THERMAL INSULATION
9280-5 (20) 8"X 1/4" FB COAMING (MA)

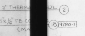
DETAIL 9-B
SCALE: 1"=1'0"
(3)

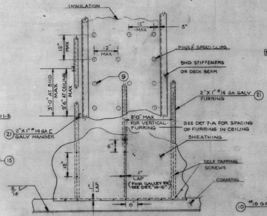

1" THERMA
AROUND B
ENCL BHD
DET 8-F BELOW UPPER DECK
16" ON CTRS MAX
DET 8-E
DET 8-E BELOW SUN DK.

DETA
SCALE
(2)


2"X 1" HORIZ ⊏ (21)
1"
3
VERT ⊏ (21)
(15)
(17)
(22)

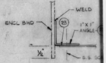
DETAIL 11-B
SCALE: 6"=1'0"
PLAN VIEW
(10)

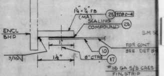

2" THERMA UL (2)
5"X 1/4" FB CO (18) 9280-1
(MA


INSULATION
12" MAX
3"
12" MAX
12" MAX
PINS & SPEED CLIPS
BHD STIFFENERS OR DECK BEAM
(9)
3'-0" AT BHD MAX
2'6" AT CEILING MAX
2"X 1" #14 GA GALV FURRING (21)
(21) 2"X 1" #14 GA ⊏ GALV HANGER
2'0" MAX FOR VERTICAL FURRING
SEE DET 7-A FOR SPACING OF FURRING IN CEILING
SHEATHING
6"
12"
SELF TAPPING SCREWS
1" LAP (FOR GALLEY ETC. SEE DET. "10-C")
1" LAP
COAMING
3/16
6"

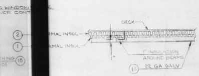
DETAIL 9-F
1 3
SCALE: 1"=1'0"

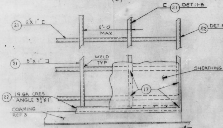
TYP. DETAILS-INSULATION/SHT. METAL SHEATHING


WELD
ENCL BHD
(23)
1"X 1" ANGLE
1/2"
S.S. SC

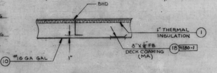

1 1/4"X 1/4" FB (MA) (25) 9280-4
SEALING COMPOUND (26)
S.M SC
ENCL BHD
1"
FOR CONT SEE DET 8
(10)
3/16
1 1/2"
6" CTRS (17)
#16 GA S/S CRES FIN. STRIP

DETAIL 8-F
FULL SIZE


G WINDOW E
NER CONT
DECK
(2) RMAL INSUL
(1) RMAL INSUL
THING (15)
DE
1"
1" INSULATION AROUND BEAMS
(11) 22 GA GALV


⊏ (21) DET 11-B
(21) 2"X 1" ⊏
2'-0 MAX
(22) DET 11-B
(21) 3"X 1" ⊐
WELD TYP
SHEATHING (15)
(17)
(22) 14 GA CRES ANGLE 3 1/2"X 1"
COAMING REF 3

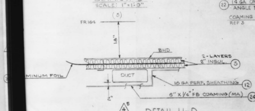
DETAIL 10-B
SCALE: 1"= 1'-0"
(10)


BHD
1" THERMAL INSULATION (1)
8"X 1/4" FB DECK COAMING (MA) (18) 9280-1
(10) #16 GA GAL
1"

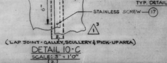
DETAIL 9-C
SCALE: 1"=1'0"
(4)

S.M. SCREW
DRESSER SPLAS
BOARD BY VEND

DETAIL 11-C
SCALE: 1"=1'-0"
(5)


FR 164
18"
BHD
2-LAYERS 2" INSUL. (3)
(3 MINUM FOIL
DUCT
16 GA PERF. SHEATHING (12)
2"
6"X 1/4" FB COAMING (MA) (24) 9280-3
4 5

DETAIL 11-D
SCALE: 1"=1'-0"


1" LAP
2"X 1" 14 GA ⊏ (21)
(15)(14)
6"
STAINLESS SCREW (17)
1 3

(LAP JOINT - GALLEY, SCULLERY & PICK-UP AREA)

DETAIL 10-C
SCALE: 3" = 1'0"
(2)

VITRO LABORA
GRAPHIC SERVICES 871-4161
1400 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-176-00-02

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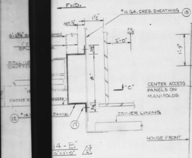
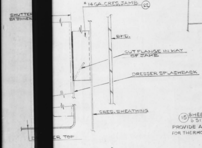
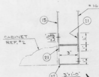
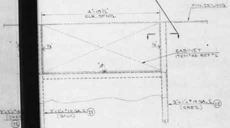

FWD.
*16 GA. CRES. SHEATHING ⑮
1½"
FR 165
2'-0"
6'-2¾"
ROLL-UP SHUTTER
FRONT
"C"
JOINER LINING
*14 GA. JAMB ㉒
⑰

"14-B" $\triangle^2_2$
6"=1'-0"

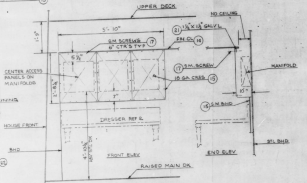

SHUTTER BY JOINER
*14 GA. CRES. JAMB ㉒
BHD.
CUT FLANGE IN WAY OF JAMB
DRESSER SPLASHBACK
CRES. SHEATHING
DRESSER TOP

"14-C" $\triangle^2_2$
6"=1'-0"


*16 GA. SHEATHING ⑮ (CRES.)
⑮
㉑
CABINET REF. #2
㉑
3"
㉒
3"=1'-0"

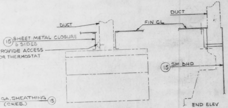

4'-10½" CLR. OPN'G.
FIN. CEILING
CABINET ITEM #46 REF. #2
¼"
¼"
3"x3"x14 GA. ㉒ (CRES.)
3"x3"x14 GA. ㉑ (GALV.)
3"x3"x14 GA. (CRES) ㉒

ELEV. "14-A"
1"=1'-0"
TRANSV. PARTITION BETWEEN GALLEY & SCULLERY


UPPER DECK
5'-10"
1'-9"
SM SCREWS 6" CTR'S TYP ⑰
5½"
CENTER ACCESS PANELS ON MANIFOLDS
2'-8½"
7"
16 GA CRES ⑮
DRESSER REF 2
HOUSE FRONT
BHD
4'-10½" ABV STL DK
FRONT ELEV
RAISED MAIN DK
NO CEILING
㉑ 1½"x1½" GALV L
FIN CL ⑭
⑰ S.M. SCREW
MANIFOLD
10"
⑮ S.M BHD
STL BHD
END ELEV

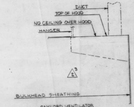
MANIFOLD ENCLOSURE IN GALLEY
LOOKING TO STBD

DETAIL 13-A
SCALE 3/4"=1'-0"


DUCT
DUCT
FIN CL
⑮ SHEET METAL CLOSURE 5 SIDES
PROVIDE ACCESS FOR THERMOSTAT
⑮ SM BHD
END ELEV

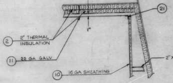
GAYLORD VENTILATOR
FRONT ELEVATION
TO GO OVER DEEP FRYER (REF. #2)
$\triangle 8$

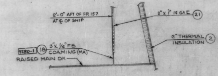
DETAIL 13-B
NO SCALE


DUCT
TOP OF HOOD
NO CEILING OVER HOOD
HANGER
$\triangle^3_2$
BULKHEAD SHEATHING

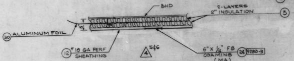
GAYLORD VENTILATOR
END ELEVATION
TO GO OVER OVEN, STEAM COOKER, GRIDDLE & BROILER REF 2

DETAIL 13-C
NO SCALE

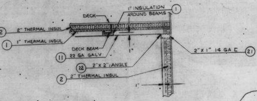

㉑
② 2" THERMAL INSULATION
1"
⑪ 22 GA GALV
2"x1" 14 GA C ㉑
⑩ 16 GA SHEATHING

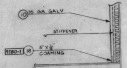

2'-0" AFT OF FR 157 AT ℄ OF SHIP
2"x1" 14 GA C ㉑
2" THERMAL INSULATION ②
9280-1 ⑱ 3"x¼" FB COAMING (MA)
RAISED MAIN DK

DETAIL 12-D
SCALE: 1"=1'-0"
(2)

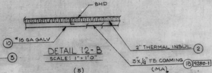

BHD
2-LAYERS 2" INSULATION ⑤
㉚ ALUMINUM FOIL
⑫ #16 GA PERF SHEATHING
$\triangle^{5\&6}_4$
6"x¼" FB COAMING (MA) ㉔ 9280-3

DETAIL 12-E
SCALE: 1"=1'-0"
(4)

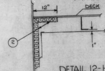

DECK
1" INSULATION AROUND BEAMS ①
② 2" THERMAL INSUL
① 1" THERMAL INSUL
DECK BEAM
⑪ 22 GA GALV
1"
2"x1" 14 GA C ㉑
㉒ 2"x2" ANGLE
② 2" THERMAL INSUL
1"


⑩ 16 GA GALV
STIFFENER
9280-1 ⑱ 5"x½" COAMING

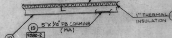
DETAIL 12-A
SCALE: 1"=1'-0"
(5)


BHD
⑩ #16 GA GALV
2" THERMAL INSUL ②
3"x¼" FB COAMING (MA) ⑱ 9280-1

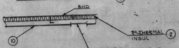
DETAIL 12-B
SCALE: 1"=1'-0"
(5)



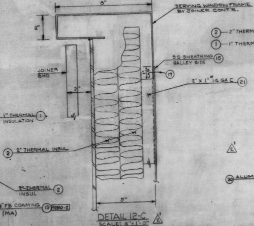
DETAIL 12-H
SCALE: 1"=1'-0
(3)


BHD
1" THERMAL INSULATION ①
⑲ 5"x¼" FB COAMING (MA)
⑩
9280-2

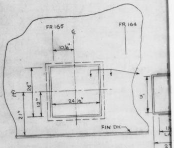
DETAIL 12-F
SCALE: 1"=1'-0"


BHD
⑩
2" THERMAL INSUL ②
5"x¼" FB COAMING (MA) ⑲ 9280-2

DETAIL 12-G
SCALE: 1"=1'-0
(3)

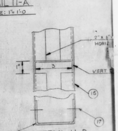

8"
SERVING WINDOW FRAME BY JOINER CONT'R.
2"
JOINER BHD
SS SHEATHING GALLEY SIDE ⑮
⑰
2"x1" 14 GA C ㉑
2"
② 2" THERMAL INSUL
5"

DETAIL 12-C
SCALE: 6"=1'-0" $\triangle^1_2$

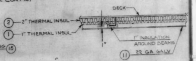

FR 165
FR 164
℄
10⅛"
24"
12"
21"
24½"
FIN DK
3"

ELEVATION TRAY SLIDE OPENING
IN SCULLERY REF 7

DETAIL 11-A
SCALE: 1"=1'-0

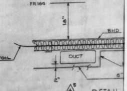

2"x1" HORIZ
1"
3
VERT
⑮
㉒
⑰

DETAIL 11-B
SCALE: 6"=1'-0"
PLAN VIEW
(10)


DECK
② 2" THERMAL INSUL
① 1" THERMAL INSUL
1" INSULATION AROUND BEAMS
⑪ 22 GA GALV

DETAIL 11-C
SCALE: 1"=1'-0"
(3)

$\triangle^1_2$


FR 164
18"
BHD
㉚ ALUMINUM FOIL
DUCT
2"
6"

$\triangle^5_4$

DETAIL
SCALE: 1

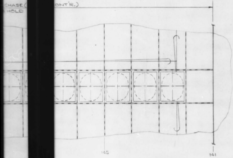
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-176-00-02

Sep 1980

8X

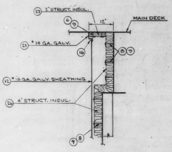
FRAME 6 OF 9


CHASE (... CONT'R.)
HOLD
145
141

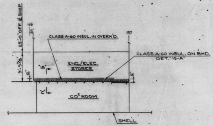
ELEV."1... ③¹
35'-3½ ... SHIP
... OUTB... SIDE SIM. TO OPP.
1/8"=1'-...

...ILL (12) HOLES FOR
...24 x ½ SELF TAPPING SCREWS ⑩
2'-...
#16 GA. GALV. COVER SHT. ⑩

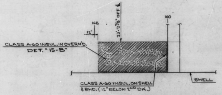
DET."... ③¹
(28-R...
1"=1...


㉗ 2" STRUCT. INSUL.
⑥⑨
12"
MAIN DECK
㉑ #14 GA. GALV.
⑯
⑧⑨
⑫ #16 GA. GALV. SHEATHING
㉖ 4" STRUCT. INSUL.
⑨⑧

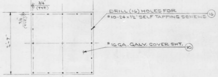
SECT. "15-C" △⁵
1"=1'-0"


25'-0" OFF ℄ SHIP
168
157
CLASS A-60 INSUL. IN OVERH'D.
CLASS A-60 INSUL. ON BHD. DET. "15-A"
9'-9⅞
"15"
ENG./ELEC. STORES
12"
"C"
CO² ROOM
SHELL

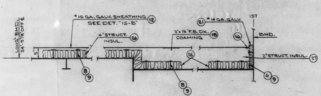
△⁵ PLAN-2ND DECK
1/8"=1'-0"


168
33'-9⅞" OFF ℄
160
12"
CLASS A-60 INSUL. IN OVERH'D. DET. "15-B"
SHELL
CLASS A-60 INSUL. ON SHELL & BHD. (12" BELOW 2ND DK.)

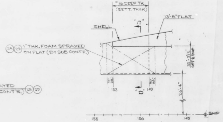
△⁵ PLAN-36'-0" FLAT
1/8"=1'-0"


2'-7"
¾" (TYP.)
2'-7"
DRILL (16) HOLES FOR #10-24 x ½ SELF TAPPING SCREWS ⑩
#16 GA. GALV. COVER SHT. ⑩

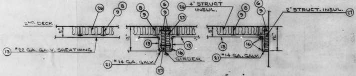
DET. "16-A" ③¹
(2-REQ'D.)
1"=1'-0"


LONG'L BHD. 34'-9⅞ OFF ℄
#16 GA. GALV. SHEATHING ⑫ SEE DET. "15-B"
4" STRUCT. INSUL. ㉖
5"
㉑ #14 GA. GALV.
157
3" x ¼" F.B. DK. COAMING ⑱
⑯
BHD.
㉖
2" STRUCT. INSUL. ㉗
⑧⑨
⑧⑨
⑥⑨

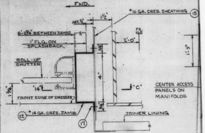
DET. "15-A" △⁵
CLASS A-60 CONSTRUCTION
BHD. TYPE
1"=1'-0"


"16 DEEP TK. (SETT. TANK)
"17"
13'-8" FLAT
SHELL
㉘㉙ 1" THK. FOAM SPRAYED ON FLAT (BY SUB CONT'R.)
35'-3½" OFF ℄ SHIP
153
149
"D"
26'-4"
155
150
145
℄ SHIP

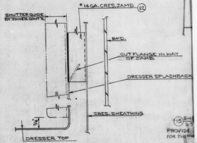
PLAN "16-B" △⁴
13'-8" FLAT
PORT SHOWN - STB'D. SIM. TO OPP.
1/8"=1'-0"


2ND DECK
㉖ ⑧⑨ ⑧⑨ ⑥⑨ ㉖ ㉗
4" STRUCT INSUL.
⑧⑨ ⑥⑨
2" STRUCT. INSUL. ㉗
5"
12"
⑬ #22 GA. GALV. SHEATHING
⑬ ⑬ ⑬
⑯ ⑯
㉑ #14 GA. GALV.
GIRDER
㉑ #14 GA. GALV.
㉗

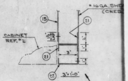
DET. "15-B" △⁵
CLASS A-60 CONSTRUCTION
1"=1'-0"
NOTE: MAX. SPACING OF PINS & CLIPS ON 12" CTR'S

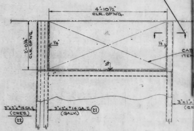

FWD.
#16 GA. CRES. SHEATHING ⑮
6'-2¾" BETWEEN JAMBS
1" FLG. ON SPLASHBACK
FR. 165
2'-0"
1'-5"
ROLL-UP SHUTTER
"14"
"C"
FRONT EDGE OF DRESSER
CENTER ACCESS PANELS ON MANIFOLDS
㉒ #14 GA. CRES. JAMB
⑰
JOINER LINING
HOUSE FRONT
BHD

"14-B" △²
6"=1'-0"


SHUTTER GUIDE BY JOINER CONT'R.
#14 GA. CRES. JAMB ㉒
BHD.
CUT FLANGE IN WAY OF JAMB
DRESSER SPLASHBACK
CRES. SHEATHING
¾"
DRESSER TOP
⑮ SHE...
PROVIDE ...
FOR THE...

"14-C" △²
6"=1'-0"


⑮
#16 GA. SHE... (CRES...
㉑
CABINET REF. #2
3"
㉑
㉒ 3"=1'-0"


4'-10½" CLR. OPN'G.
2'-0¾" CLR. OPN'G.
¼"
CAB... ITEM...
3" x 2" x ¼ GA. C (CRES.) ㉒
3" x 2" x #14 GA. C (GALV.) ㉑
3" x 1"... (CR...

ELEV. "14-A"
1"=1'-0"
TRANSV. PARTITION BETWEEN GALLEY & SCULLERY

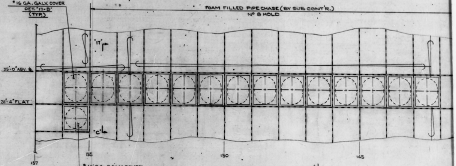
ALTERATIONS (CONT'D.)

Nº	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
8² 7	3/19/79	5 4 5 4	5) IN PLAN OF SUN DECK REVISED CEILING HEIGHTS IN LOCKER ON STB'D. & ELEV. MACH'Y. RM. & CL. GEAR LKR. ON PORT SIDE BETWEEN FRS. 164-168 TO CLEAR VENT DUCTS. 6) IN PLAN OF BOAT DK. REVISED CEILING HEIGHTS OUTB'D. OF LONG'L. HOUSE BHD., 38'-0" OFF ℄. BETWEEN FRS. 164-167 P/S TO CLEAR PIPING. ADDED PLAN "5-B" TO SUIT 7) IN PLAN OF BOAT DK. REVISED CEILING HEIGHT IN OFF'RS. LAUNDRY TO CLEAR VENT DUCTS.	R L W	JLM
8	6/4/79	21 1,4 5 2	1) ADDED SOFFIT FOR LIGHTING FIXTURE OVER RANGE & EXPANDO IN GALLEY. ELEV. "21-A" & SECT. "21-B" ADDED & IN DET. "13-B" REVISED TITLE TO SUIT. ABV. IN ACCORDANCE WITH Y.I.S. # H-4650-21-966. 2) IN PLAN OF BOAT DK. REVISED EXTENT OF INSUL. & CEILING HTS., OUTB'D. OF LONG'L HOUSE BHD. 38'-0" OFF ℄. BETWEEN FRS. 164-167 P/S TO CLEAR RELOCATED PIPING. PLAN "5-B" ALTERED TO AGREE. THE ABV. RELEASES RESERV. #1 FOR ALT. 7⁶ 3) B/M REVISED AS FOLLOWS: ITEM #14 INCREASED FROM 16 TO 19 " #15 " " 41 TO 42	R L W	RJK. 6-8-79 JLM 6/6/79
9	8/28/79	3 3 2	1) IN PLAN OF MAIN DK. CORRECTED EXTENT OF FOAM INSULATION AT INACCESSIBLE VOID AREA, FRS. 170-181 P/S 2) IN PLAN OF RAISED MAIN DK. INDICATED PIPING ENCLOSURE IN GALLEY AFT OF REFRIG. DOOR, STB'D. SIDE. B/M REVISED AS FOLLOWS: Pc. Nº 15 INCREASED FROM 42 TO 43 Pc. Nº 16 13,720 TO 13,780 Pc. Nº 21 73 TO 74 ABOVE ALT. 9² IN ACCORDANCE WITH Y.I.S. Nº H-4650-21-1029.	R L W	JLM

ALTERATIONS (CONT'D.)

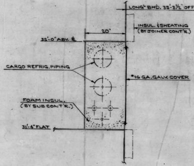
Nº	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
4	10/10/78	3 6 2 1,2 1,2 16,17 7,8 9,11 12 1,2 9,12	1) IN PLAN OF MAIN DECK DELETED NOTE CALLING FOR FOAM BETWEEN MACH'Y. CASING BHD. & HOUSE SIDE BHD. & ADDED 2" THERMAL INSUL. UNDER RAISED MAIN DECK BETWEEN FRS. 170-182 P/S. DETAIL "6-B" ADDED TO SUIT. 2) NOTE ADDED TO FOAM FILL VOID FROM HOUSE SIDE OUTB'D. TO SHELL UNDER RAISED MAIN DECK, FRS. 170-182 P/S. 3) B/M REVISED AS FOLLOWS: ITEM Nº 1 INCREASED FROM 4500# TO 5250#; 2 8000# TO 9900#; 5 2047 TO 3087; 6 4,350 TO 6,250; 8 4,152 TO 4,452; 9 11,785 TO 15,025; 11 46 TO 88; 16 12,200 TO 13,750; 21 59 TO 62 4) SPRAY FOAM INSUL. ADDED ON 13'-8" FLAT IN WAY OF FUEL OIL SETTLING TANKS P/S. ADDED PLAN "16-B" & SECT. "17-D" & Pc. Nos 28 & 29 IN B/M TO SUIT. 5) REVISED ACOUSTIC INSULATION IN CHAIR & INSERT STOWAGE LKR., GARBAGE ROOM, CREW'S LAUNDRY & OFFICERS' LAUNDRY. DETAILS "7-B", "8-A", "9-B", "11-D" & "12-E" ALTERED TO SUIT. B/M REVISED AS FOLLOWS: ITEM Nº 3 INCREASED FROM 1800 TO 2375; 3 - CORRECTED U.S.C.G. APP'L. Nº; 4 DECREASTED FROM 2952 TO 2380; 4 - DELETED U.S.C.G. APP'L. Nº ABV. TO SUIT U.S.C.G. REQ'MTS. 6) IN DETAILS "9-E" & "12-E" REVISED DECK COAMING TO SUIT CONDITIONS ON SHIP	R L W	JLM 10/13/78
5	11/9/78	3	1) ADDED SHT. METAL ENCLOSURE AROUND DRAIN PIPES AT LONG'L. BHD. 12'-6" OFF ℄, STB'D. SIDE, IN SCULLERY AREA. ABV. TO AGREE WITH REF. Nº 3 ALT. 2¹	R L W	JLM 11/29/78
6	2/9/79	3,4 3,4 18,19 20 1,2 1	1) IN PLAN VIEWS OF RAISED MAIN DK., UPPER DK. & BOAT DK. ADDED AFT TRANSV. MACH'Y. CASING BHD. FOR CORRECTION. 2) IN PLAN VIEWS OF RAISED MAIN DK., UPPER DK. & BOAT DK. ADDED PROTECTIVE SHEATHING IN MACHINERY CASING TO PROTECT JOINER INSULATION. ADDED PLAN VIEW OF 2ND. DK. TO SHOW PROTECTIVE SHEATHING & DETAIL "19-A" & SECT. "20-A" TO SUIT ABV. 3) B/M REVISED AS FOLLOWS: ITEM Nº 10 INCREASED FROM 98 TO 132; 17 3200 TO 5600; 21 62 TO 73 4) TITLE OF DWG. REVISED TO INCLUDE MACH'Y SPACES. ABV. TO SUIT ALT. 6¹ & 6²	R L W	JLM 2/9/79
7	2/26/79	4,20 5,6 5 4	1) IN PLAN OF UPPER DECK REVISED SHEATHING ON INB'D. LONG'L BHD. & FWD. TRANSV. BHD. IN LOCKER TO CLEAR VENT DUCT. DET. "20-B" ADDED TO AGREE. ABV. IN ACCORDANCE WITH Y.I.S. Nº H-4650-21-880. 2) IN PLAN OF SUN DECK REVISED INSUL. & SHEATHING ON LONG'L BHD. OUTB'D. OF STAIR TOWER P/S. SECT. "6-C" ADDED TO SUIT. 3) IN PLAN OF SUN DECK RELOCATED INSUL. & SHEATHING FROM RADAR MAST ENCLOSURE TO RADAR ROOM SIDE OF LONG'L. & TRANSV. BHDS. ADDED DET. "5-A" TO SUIT. ABV. DUE TO ACCESSABILITY. 4) IN PLAN OF BOAT DECK REVISED INSUL. & SHEATHING IN STRUCT. VENT PLENUMS BETWEEN FRS. 180-184 P/S. ASSOCIATED DETAILS ALTERED & SECT. "5-C" ADDED TO AGREE.	R L W	

CONT'D. ZONE 19



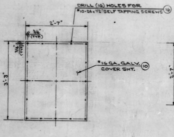
*16 GA. GALV. COVER DET. "17-B" (TYP.)
FOAM FILLED PIPE CHASE (BY SUB CONT'R.)
Nº 8 HOLD
"17"
35'-0" ABV. ℄
31'-4" FLAT
"C"
157
155
150
145
*16 GA. GALV. COVER DET. "16-A" (TYP.)

ELEV. "17-A" 3¹
LONG'L. BHD. 35'-3½" OFF ℄ SHIP
PORT SIDE SHOWN LKG. OUTB'D. - STB'D. SIDE SIM. TO OPP.
3/8" = 1'-0"



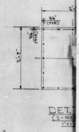
LONG'L BHD. 35'-3½" OFF ℄
INSUL. & SHEATING (BY JOINER CONT'R.)
20"
35'-0" ABV. ℄
CARGO REFRIG. PIPING
*16 GA. GALV. COVER
FOAM INSUL. (BY SUB CONT'R.)
31'-4" FLAT

SECT. "17-C" 3¹
1" = 1'-0"

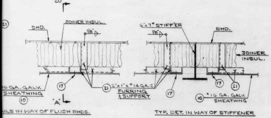


DRILL (16) HOLES FOR #10-24 x ½" SELF TAPPING SCREWS ⑯
2'-7"
¾" (TYP.)
¾" (TYP.)
3'-3"
*16 GA. GALV. COVER SHT. ⑩

DET. "17-B" 3¹
(28-REQ'D.)
1" = 1'-0"

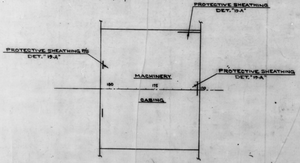


2'-
¾" (TYP.)
¾" (TYP.)
2'-7"
DET.
(2-RE
1"=1'



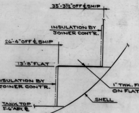
"20"
㉑
BHD.
JOINER INSUL.
1/8"
6"x7" STIFF'ER
BHD.
JOINER INSUL.
16 GA. GALV. SHEATHING ⑩
⑰
㉑ 2"x1"x#14 GA. ⊏ FURRING & SUPPORT
⑰
⑰
㉑
⑩ *16 GA. GALV. SHEATHING
"A"
AILS IN WAY OF FLUSH BHDS.
TYP. DET. IN WAY OF STIFFENER

DETAIL "19-A" 6²
PROTECTIVE SHEATHING DETAILS
3" = 1'-0"



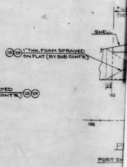
PROTECTIVE SHEATHING DET. "19-A"
PROTECTIVE SHEATHING P/S DET. "19-A"
MACHINERY
CASING
PROTECTIVE SHEATHING DET. "19-A"
180
175
170

6² PLAN - 2ND. DECK
1/8" = 1'-0"



35'-3½" OFF ℄ SHIP
INSULATION BY JOINER CONT'R.
26'-4" OFF ℄ SHIP
13'-8" FLAT
INSULATION BY JOINER CONT'R.
1" THK. FOAM SPRAYED ON FLAT (BY SUB CONT'R.) ㉘ ㉙
SHELL
TANK TOP 5'-6" ABV. ℄

4⁴
SECT. "17-D"
NO SCALE
(16)



*16
(SE
SHELL
㉘ ㉙ 1" THK. FOAM SPRAYED ON FLAT (BY SUB CONT'R.)
3'-0"
153
155
P
PORT SH

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GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

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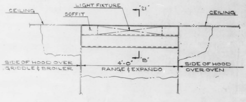
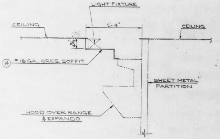
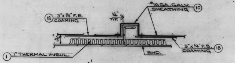
FRAME 7 OF 9


CEILING
LIGHT FIXTURE
SOFFIT
"21"
CEILING
4'-0"
"B"
SIDE OF HOOD OVER GRIDDLE & BROILER
RANGE & EXPANDO
SIDE OF HOOD OVER OVEN

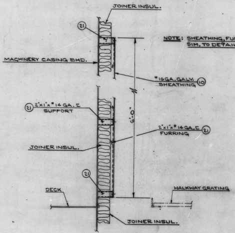
8¹ ELEV. "21-A"
RECESSED SOFFIT OVER RANGE & EXPANDO FOR LIGHTING FIXTURE
ELEV. LKG. FWD.
1"=1'-0"


LIGHT FIXTURE
CEILING
2'-4"
CEILING
14
#18 GA. CRES. SOFFIT
SHEET METAL PARTITION
HOOD OVER RANGE & EXPANDO

8¹ SECT. "21-B" (21)
1"=1'-0"

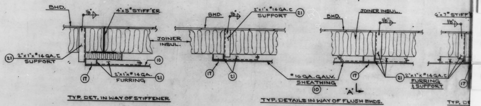

#16 GA. GALV. SHEATHING
10
18
3"x1/4" F.B. COAMING
1/4" TYP.
1
1" THERMAL INSUL.
BHD.
3"x1/4" F.B. COAMING
18

7¹ DETAIL "20-B"
3"=1'-0"


JOINER INSUL.
21
MACHINERY CASING BHD.
#16 GA. GALV. SHEATHING
10
21
2"x1"x#14 GA. C SUPPORT
6'-0"
2"x1"x#14 GA. C FURRING
21
JOINER INSUL.
21
DECK
WALKWAY GRATING
JOINER INSUL.

NOTE: SHEATHING, FURRING & SCREW SPACING SIM. TO DETAIL "9-F"

SECT. "20-A" (19) 6²
1 1/2"=1'-0"


BHD.
1/8"
4"x5" STIFF'ER.
21
2"x1"x#14 GA. C SUPPORT
10
17
2"x1"x#14 GA. FURRING
21
BHD.
1/8"
2"x1"x#14 GA. C SUPPORT
21
JOINER INSUL.
17
21
#16 GA. GALV. SHEATHING
10
"20"
BHD.
JOINER INSUL.
1/8"
17
21
2"x1"x#14 GA. C FURRING & SUPPORT
"A"
6"x7" STIFF
1/8"
17

TYP. DET. IN WAY OF STIFFENER

TYP. DETAILS IN WAY OF FLUSH BHDS.

TYP. DE

DETAIL "19-A" 6²
TYPICAL PROTECTIVE SHEATHING DETAILS
3"=1'-0"

ALTERAT

	Nº	DATE	ZONE	DESCRI
8²	7	3/19/79	5 /	5) IN PLAN OF SU CEILING HEIGH & ELEV. MACH'Y. ON PORT SIDE TO CLEAR VEN
			4 5	6) IN PLAN OF BOA HEIGHTS OUTB BHD., 38'-0" OF FRS. 164-167 ADDED PLAN
			4	7) IN PLAN OF BOA CEILING HEIGH TO CLEAR VEN
	8	6/4/79	21	1) ADDED SOFF FIXTURE OVE IN GALLEY. ELEV. "21-A" & IN DET. "13-B TO SUIT. ABV. IN ACC Y.I.S. # H-465
			1,4 5	2) IN PLAN OF B EXTENT OF IN OUTB'D. OF LO 38'-0" OFF ℄ P/S TO CLEA PLAN "S-B" A THE ABV. REL FOR ALT. 7⁶
			2	3) B/M REVISE ITEM # 14 INCRE " # 15
	9	8/28/79	3	1) IN PLAN OF M EXTENT OF FO INACCESSIBL FRS. 170-181
			3	2) IN PLAN OF R INDICATED IN GALLEY A DOOR, STB'D
			2	B/M REVISED Pc. Nº 15 INCREAS Pc. Nº 16 Pc. Nº 21 ABOVE ALT. 9² IN Y.I.S. Nº H-4650

21 | 20 | 19

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FRAME 8 OF 9

49957 (Rev.A 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C–25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K		CWE 301 SAW (Single)
(Lincoln 860–0 Flux)		CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M	CWE 108 SMAW (Fillet Welds 9018M)
	11018M	(Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

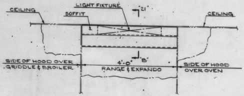
I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A–514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

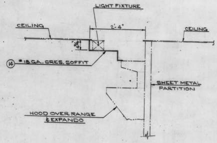
NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3



LIGHT FIXTURE
"21"
CEILING
SOFFIT
CEILING
"B"
SIDE OF HOOD OVER GRIDDLE & BROILER
4'-0"
RANGE & EXPANDO
SIDE OF HOOD OVER OVEN

8' ELEV. "21-A"
RECESSED SOFFIT OVER RANGE & EXPANDO
FOR LIGHTING FIXTURE
ELEV. LKG. FWD.
1" = 1'-0"



LIGHT FIXTURE
CEILING
2'-4"
CEILING
3/4"
14 *18 GA. CRES. SOFFIT
SHEET METAL PARTITION
HOOD OVER RANGE & EXPANDO

8' SECT. "21-B" (21)
1" = 1'-0"

18 3"x1/4" F.B
COAMING
1"THERMAL INSUL.
MACHINERY CA
21 2"x1"x
SU
JOINE
21

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FRAME 9 OF 9

3 2

LIST OF MATERIALS FOR ONE SHIP

NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	SOURCE
EXPANDED METAL	72'	STL.	GEN. NOTE #12	1/2" MESH #13 GA. FLAT ROLLED	36" × 96" PANEL	RYERSON CAT #118 P. 58 A
PANEL & DOOR FRAMES	105	MILD ST'L	ABS GR A	1¼"×1¼"×3/16" L × 20'-0"	CUT TO SUIT	
REINFORCING F.B. FOR PANELS	10			1½"×3/16" F.B. × 20'-0"	LENGTH TO SUIT PANEL WIDTHS	
MARGIN PLATE	7	MILD ST'L.		2"×3/16" F.B. × 20'-0"	CUT TO SUIT	
FILLER P	1			3/16"×3/4" F.B. × 7'-0"	SECT. "13-A"	
CORNER BRACKETS FOR PANELS	231			3"×3"× 5.10# PL	DET. "10-C"	
COAMING	10	MILD. STL.		6"×3/16" F.B × 20'-0"	CUT TO SUIT	
MARGIN PLATE	1			18" × 6'-6" × 7.66# PL	SCRIBE TO SUIT	
CURTAIN PLATE	1			2'0" × 9'-6" × 7.66# PL	SCRIBE TO SUIT	
CURTAIN PLATE	1			13"×2'-0"× 7.66# PL	SCRIBE TO SUIT	
CURTAIN PLATE	1			4'-6"×2'-0"× 7.66# PL	SCRIBE TO SUIT	
CORNER-3"B	1			13½"×7'-2"× 7.66# PL	SECT. "14-B"	
REINF. F.B. BRACKETS (TAPERED)	1			2"×3/16" F.B × 19'-0"	SECT. 14-C, CUT TO SUIT CURTAINS	
CURTAIN PLATE	1			20"×12'-0"× 7.66# PL	CUT TO SUIT	
CORNER BRACKETS FOR DOORS	112			6"×6"× 5.10# PL	DET. "11-B"	
REINFORCING F.B. FOR DOORS	9			2"×3/16" F.B. × 20'-0"	DET. "11-A," CUT TO SUIT	
MARGIN PLATE	1	MILD. ST'L.		6"×3/16" F.B. × 3'-9" LG.	SECT. "13-F"	
FILLER PLATE	1			2'-7"×2'-5"× 7.66# PL	SCRIBE TO SUIT	
CURTAIN PLATE	1			7½"×5'-6"× 7.66# PL	SCRIBE TO SUIT	
CORNER (SQUARE)	1			14"×7'-7"× 7.66# PL	SECT. "14-D"	
CURTAIN PLATE	1			12"×3'-0"× 7.66# PL	CUT TO SUIT	
CORNER-3"B	1			6"×6"×8'-5"× 7.66# PL	SECT. "14-A"	
CURTAIN PLATE	1			2'-3"×9'-0"× 7.66# PL	CUT TO SUIT	
ANGLE	1			2"×2"×3/16" L × 6'-0"	SECT. "15-A"	
CURTAIN PLATE	1			2'-3½"×5'-9"× 7.66# PL	CUT TO SUIT	
MARGIN PLATE	1			23"×6'-3"× 7.66# PL	SECT. "13-F" SCRIBE TO SUIT	
CURTAIN PLATE	2			2'-3½"×16'-0"× 7.66# PL	CUT TO SUIT	
CORNER-3"B	1			12"×8'-10"× 7.66# PL	SECT. "14-A"	
CURTAIN PLATE	1			2'-8½"×23'-6"× 7.66# PL	CUT TO SUIT	
DOOR STOP	12			1"×1"×3/16" L × 3" LG.	DET. "13-G"	
HOLD BACK HOOK	7			3/8" DIA. ROD	DET. "12-A" LGT. TO SUIT	
STAPLE	13			3/8" DIA. ROD	DET. "12-B" LOCATE TO SUIT	
PADS	24			3"×3/8" F.B. × 3" LG.	FOR PC. #32, DET. 12-B	
HASP & STAPLE	12	GALV. ST'L	COMM'L	3½" HINGED HASP		
DOOR PULL	12	STEEL	ABS GR A	3/8" ⌀ RD. BAR × 15" LG	EACH, DET "11-C"	
HINGE	36	GALV. ST'L	COMM'L	3"×2" WITH STAINL'S. STL. FAST PIN	W/ HOLES	
DOOR STOP	1	STEEL	ABS GRA	7/8" DIA. ROD × 4'-0"	DET. 12-C (CUT TO SUIT	
CRUTCH TIP (BUMPER)	6	RUBBER	COMM'L.	—	DET. 12-C	
CORNER PLATE	2	MILD ST'L.	ABS GR A	4"×8'-6"× 7.66# PL	SECT "9-C"	
CURTAIN PLATE	1			2'-0"×10'-6"× 7.66# PL	CUT TO SUIT	
CURTAIN PLATE	1			2'-6"×4'-9"× 7.66# PL	CUT TO SUIT	
CORNER-3"R.	1			8"×9'-0"× 7.66# PL	SECT. 7-B	
CURTAIN PLATE	1			2'-6"×10'-9"× 7.66# PL	CUT TO SUIT	
REINF. BRACKET	1			12"×2'-6"× 7.66# PL	DET. 6-B	
MARGIN PLATE	1			11¾"×6'-7"× 7.66# PL	SECT. 12-E	
CURTAIN PLATE	1			2'-8"×4'-0"× 7.66# PL	CUT TO SUIT	
CORNER-3 R.	1			11"×9'-0"× 7.66# PL	SECT. 13-C	
CURTAIN PLATE	1			2'-6"×7'-10"× 7.66# PL	CUT TO SUIT	
CURTAIN PLATE	1			2'-6"×3'-0"× 7.66# PL	CUT TO SUIT	
MARGIN PLATE	1			9"×8'-9"× 7.66# PL	SECT. 9-A	
CURTAIN PLATE	1			2'-6"×2'-10"× 7.66# PL	CUT TO SUIT	
CORNER-3"R	1			13"×8'-9"× 7.66# PL	SECT. 9-A	
CURTAIN PLATE	1			2'-3"×5'-0"× 7.66# PL	CUT TO SUIT	
CURTAIN PLATE	1			2'-3"×10'-9"× 7.66# PL	CUT TO SUIT	
CORNER UPRIGHT	1			ST4WF 8.5, 8'-9" LONG	SECT. 9-B	
CURTAIN PLATE	1			2'-6"×7'-2"× 7.66# PL	CUT TO SUIT	
CURTAIN PLATE	1			2'-4"×15'-3"× 7.66# PL	CUT TO SUIT	
REINF. BRACKET	1			12"×2'-0"× 7.66# PL	SIM. TO DET. 6-B	
MARGIN PLATE	1			5'-3"×8'-6"× 7.66# PL	SCRIBE TO SUIT	
MARGIN PLATE STIFFENER	40			3½"×3/16" F.B × 3" LG.	CUT TO SUIT	
CORNER-3"R.	1			8"×8'-9"× 7.66# PL	SECT. 9-A	
MARGIN PLATE	1			6"×3'-0"× 7.66# PL	SCRIBE TO SUIT	
MARGIN PLATE	1			2'-0"×5'-0"× 7.66# PL	SCRIBE TO SUIT	
CURTAIN PLATE	1			9"×6'-2"× 7.66# PL	CUT TO SUIT	

GENERAL NOTES

ALL PANELS, DOORS & DOORSTOPS SHALL BE COMPLETELY FABRICATED AND THEN HOT DIPPED GALVANIZED.

GRIND ALL ROUGH EDGES OR CORNERS LIABLE TO INJURE PERSONNEL OR EQUIPMENT.
ALL LONG'L. BHDS. TOP OF CURTAIN P. SHALL FOLLOW THE SHEER LINE & BOTTOM OF CURTAIN P SHALL BE PARALLEL TO ℄ EXCEPT AS NOTED
DOOR STOPS & HOLD BACK HOOKS TO BE LOCATED IN FIELD AS NEEDED.

ALL MATERIAL TO BE MILD STEEL (MA) CONFORMING TO A.B.S. GRADE "A"

SEE DET. "10-C" & "11-B" FOR TYPICAL WELDING OF EXPANDED METAL TO PANELS & DOORS.
ALL OPENINGS IN CURTAIN PLATES FOR BEAMS SHALL BE CLOSED WITH
WIRE MESH TO FORM COMPLETE RAT-PROOFING (WITH 1" LAP OF STRUCTURE WHERE POSSIBLE)
ALL SNIPES TO BE 1/2" RAD., UNLESS OTHERWISE NOTED.
ADJACENT PANEL FRAMES SHALL BE CONNECTED BY WELDING, SEE SECT. "13-C". ALL MOUNTING SURFACES BETWEEN FRAMEWORK
& ADJACENT PANELS TO BE SMOOTH & FLUSH.
ALL WELDING TO BE 1/8" UNLESS NOTED AND ALL WELDING TO BE IN ACCORDANCE WITH ABS RULES & REF. #2.
ALL PANELS & DOORS SHALL BE OF EXPANDED METAL (TO BE "RYEX" WALKWAY PATTERN OR EQUAL,
1/2" MESH, FLAT ROLLED, #13 GA. STEEL) APPLIED TO 1¼"×1¼"×3/16" L FRAME AS INDICATED ON DWG.
DAMAGED GALVANIZED AREAS AT FINAL ASSEMBLY SHALL BE THOROUGHLY CLEANED COVERED WITH A SUITABLE ANTICORROSIVE
COLD GALVANIZING COATING.

UAO - 50177

L/M CONTINUED.

NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	SOURCE
CORNER BKT. FOR PANEL	1	STEEL	ABS GR A	3"×6"× 5.10# PL	DET. 10-A	
CORNER BKT. FOR PANEL	1			3"×7½"× 5.10# PL	DET. 10-A	
DOOR SUPPORT	2	STEEL		1"×3/16" F.B. × 7'-0"	DET. 11-C	
HINGE FASTENING BOLTS	117	CRES.	COMM'L.	No. 10 × 1/2" × 32 THDS. F.H. SLOTTED	MACH. SCREWS	
LOCK WASHER	117	CRES.		No. 10, FOR PC #68		
#10 HEX NUT	117	CRES.		FOR PC. No. 68 & 69		
CURTAIN PLATE	1	MILD STEEL	ABS GR A	18"×2'-0" 7.66# PL	SCRIBE TO SUIT	
CORNER 3"R.	1			15¾"×9'-0"× 7.66# PL	SECT. 13-C	
CORNER 3"R.	1			13½"×8'-2"× 7.66# PL	SECT. 14-B	
MARGIN PLATE	1			2"×3/16" F.B × 9'-0" LG.	CUT TO SUIT	
CURTAIN PLATE	1			2'-6"×4'-0"× 7.66# PL	SECT. 12-E	

3 L/M CONT. ON PANEL 19 2

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
3	5/17/78	19	8) IN B/M ADDED ITEM 97 TO SUIT ITEMS 4 AND 5 ABOVE.		
		19	9) IN B/M CHANGED QUANTITY OF HANGERS ITEM 88 FROM 34 TO 32 TO SUIT ITEMS 2,3,4 & 5 ABOVE.	USPH 7/6/78	
		16	10) ADDED DETS. "16-B" & "16-C" TO SUIT ELEV. 28 & 30.		JdM
		18	11) REMOVED 2" DIM. FROM SECT. "18-D" THE ABOVE RELEASES HOLD-UP YIS H4650-21-588.	USCG (NR)	
4	8/25/78	4	1. IN 36'-0" MACHY. FLAT KEY PLAN, INDICATED ADDITION OF TRANS'E EXP. MTL. BHD. "4-A" AT FR. 167.	JTS	
		4	2. ADDED ELEV. "4-A" DETAILING TRANS'E BHD. AT FR. 167 PORT, IN ELEC. WORKSHOP/STOREROOM AREA ON 36'-0" FLAT.		
		3	3. IN B/M ITEM #2 QTY. INCREASED FROM 101 TO 104.		
		3	4. IN B/M ITEM #3 QTY. INCREASED FROM 9 TO 10.		
		3	5. IN B/M ITEM #7 QTY. INCREASED FROM 9 TO 10.		
		3	6. IN B/M ITEM #16 QTY. INCREASED FROM 7 TO 8.		
		3	7. IN B/M ITEM #27 QTY. INCREASED FROM 1 TO 2.		
		5	8. ADDED DETAIL "5-A".		
		15	9. IN PANEL SCHEDULE ADDED PANELS No. 36 AND 37.		
		19	10. IN DOOR SCHEDULE ADDED DOOR No. 11.		
		19	11. IN B/M ADDED ITEMS #98, 99 & 100.		
		3	12. IN B/M ITEM #1 QTY. INCREASED FROM 49 TO 52.		
		11	13. IN DET. "11-A" NOTED DOOR #11.		
		3	14. IN B/M ITEMS #34 & 35 QUANTITY INCREASED FROM 10 TO 11.		JdM
		3	15. IN B/M ITEM #36 QTY. INCREASED FROM 30 TO 33.		
		3	16. IN B/M ITEMS #68, 69 AND 70 QTY. INCREASED FROM 108 TO 117. ABOVE PER DEVELOPMENT. (SHIPS SPEC'S PG. 80-6)	USPH 10-18-78	
5	5/10/79	15	1. ADDED DOOR #12 TO DOOR SCH. - PANEL 15.	J. A. L.	
		11	2. ADDED DOOR #12 TO DET "11-A".		
		21	3. ADDED SUN DECK KEY PLAN, ELEV. "21-A" & SECT "21-B".		
		19	4. ADDED ITEM No. 101 & 102 TO B/M.		
		3	5. IN B/M INCREASED QTY OF ITEM No. 2 FROM 104 TO 105.		
			6. IN B/M INCREASED QTY OF ITEM No. 15 FROM 108 TO 112.		
			7. IN B/M INCREASED QTY OF ITEM No. 16 FROM 8 TO 9.		
			8. IN B/M INCREASED QTY OF ITEM No. 31 FROM 6 TO 7.		
			9. IN B/M INCREASED QTY OF ITEM No. 32 FROM 12 TO 13.		
			10. IN B/M INCREASED QTY OF ITEM No. 34 FROM 11 TO 12.		
			11. IN B/M INCREASED QTY OF ITEM No. 35 FROM 11 TO 12.		
			12. IN B/M INCREASED QTY OF ITEM No. 36 FROM 33 TO 36.		
			13. IN B/M INCREASED QTY OF ITEM No. 67 FROM 1 TO 2. ABOVE ITEMS ARE IN ACCORDANCE WITH 23 DEPT REQUEST OF 5/2/79.		JdM
6	6/6/79	4	1. IN THE 36'-0" MACHY FLAT KEY PLAN, REVISED DOOR SWING FROM ELEC WORKSHOP TO STRM IN ORDER TO CLEAR VENT DUCT.	J. A. L.	JdM
		15	2. IN DOOR SCHEDULE CHANGED DOOR No. 11 FROM R.H.R. TO L.H.R. ABV. ITEMS REQUESTED BY 22 DEPT		
7	8/3/79	19	1. IN B/M, ITEM 87, INCREASED THE QTY. OF TRACK FROM 60 L.F. TO 105 L.F. ABV ITEM PER DEVELOPMENT.	J. L.	
8	10/24/79	21	1. ADDED KEY PLAN OF 26'-0" FLAT (PORT ONLY) IN PANEL 21.		
		21	2. ADDED SECT "21-C" TO SUIT ITEM No. 1 ABV.		
		17	3. REVISED LONG'L. BHD 41'-10" OFF ℄ STBD IN PANEL 17.		
		16	4. REVISED DETS "16-B" & "16-C" TO SUIT ITEM No. 3 ABV.	J. L.	
		15	5. REVISED PLAN SECT "15-C".		JdM
		15	6. ADDED ITEM 103 TO B/M.		
		15	7. IN B/M INCREASED ITEM 92 FROM 240 CU FT TO 243 CU FT.		
		3	8. IN B/M INCREASED ITEM 1 FROM 52' TO 72'. ABV ITEMS PER YIS H-4650-21-1027 - 8/11/79 & YIS H-4650-21-1042 - 9/20/79		

U.S.P.H 7/3/79

U.S.C.G 7/3/79

U.S.P.H 7/9/79

USPH 9-7-79

USCG 1-7-80

USPH 1-31-80

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	7/11/77	THRU OUT.	1. GEN NOTE #8 ON ELEVATIONS NO. 3, 4, 6, 8 THRU 19, 21, 26, 27, 31 & SECT. 12-G CORRECTED TO READ GEN NOTE #7.		
		18	2. ADDED REFERENCE TO GEN. NOTE #7 ON ELEVATION 18-A. ABOVE ALTS. MADE IN ACCORDANCE WITH G.G.S. LETTER DATED JULY 1, 1977	JM	JdM
2	9/19/77	4	1) IN KEY PLAN OF MAIN DK. FWD. RELOCATED EXPANDED MET. BHD #20 FROM FR 19 TO 18 & EXTENDED INB'D FROM 16'-0" TO 14'-0" OFF ℄.		
		9	2) IN ELEV. OF BHD. #17 INCREASED LENGTH OF BHD.		
		10	3) IN ELEV OF BHD. #20 REVISED TO SUIT INCREASED LENGTH.	9/26/77	
		15	4. IN PANEL SCH. CHANGED THE "A" DIMENSION OF PANELS #24, 30 & 29		
		23	5) IN BM CHANGED QUAN & SIZE OF ITEM #1 & QUAN OF ITEM #2	EK	
		10	6) IN DET. "10-A" REVISED SIZE & SHAPE OF PANEL. ALT TO SUIT DEPT. 23 REQUEST		JdM
3	5/17/78	16/17	1) REVISED "KEY PLAN OF 2ND DK" OF CO₂ BOTTLE STOWAGE AREA. DELETED ELEV. DET. "31," TRANS'E BHD. FR. 159.	JTS	
		16, 19 & 20	2) IN ELEV. 26, REARRANGED SYSTEM & SIZE OF SLIDING DOORS. REMOVED ELEV. 25. DELETED SECT. 20-B. IN B/M DELETED ITEMS 79 & 80 & CHANGED SIZE OF ITEM 81. IN SLIDING DOOR LIST REVISED SIZE OF SD #2 FROM 3'-6 1/16" TO 3'-5 5/8" WIDE & INCREASED No. REQ'D., ALSO DELETED SD #1.		
		16/19	3) IN SECT. "19-D" & "19-E" ALTERED TO SUIT "ELEV. 29". "ELEV. 29" ALTERED TO SUIT "KEY PLAN 2ND DK".		
		15/16	4) ALTERED ELEV. 28 TO SUIT "KEY PLAN 2ND DK". ADDED PLAN DET. "15-B" TO SUIT ABV. ELEV. 28 ALTERATION. IN B/M INCREASED SIZE OF ITEM 84.		
		15/17	5) ALTERED ELEV. 30 TO SUIT "KEY PLAN 2ND DK." ADDED PLAN DET. "15-C" TO SUIT ABV. ELEV. 30 ALT. IN B/M INCREASED SIZE OF ITEM 86.		
		20	6) IN SLIDING DOOR LIST CHANGED SIZE & NUMBER REQ'D. OF SD #5 TO SUIT ABOVE ITEM 5.		
		20	7) IN SLIDING DOOR LIST CHANGED SIZE OF SD #3 TO SUIT ABOVE ITEM 4. (CONTINUED IN NEXT COLUMN)		

U.S.C.G. 10-7-77

G.G.S. 10-24-77

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 177

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NOTED DATE 27 MAY 1977
DRAWN P. KRAUSE IN CHARGE L. THADEN
CHECKED LT EXAMINED J. L. Mullin
REVIEW APPROVED R.A. Jacobson

PLAN NO. H-4650-177-00-01 ALT. NO. 8

EXPANDED METAL
BHD'S. & DETAILS

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-1-77	10-24-77			
A.B.S.	╳				
U.S.C.G.	6-3-77				
LLOYD'S R.S.	╳				
U.S.P.H.S.	6-7-77	10-7-77			

UNIT #9620	
DATE	S.O. MARK
1-21-78	55
10-30-78	

REFERENCE PLANS

NO.	PLAN NO.	TITLE
11	H4650-129-00-02	STRUCTURAL KINGPOST & BOOM PEDESTAL FDTN.
10	H4650-129-02-29	FOCSLE DK. PLTG.
9	H4650-282-00-25	ARRG'T STOREROOM 36'-0" & 26'-0" LEVEL
8	H4650-129-02-12	FLATS BEL. 2ND DK 157-181
7	H4650-129-01-20	TRANS'E SEC. ABV. AFT BEAK TK. AFT 212 SH 2
6	H4650-129-01-14	TRANS'E SEC., BHD & FRAMES 157-170 SH 2
5	H4650-129-02-19	2ND DK PLTG. AFT 153½ SH 2
4	H4650-129-02-18	2ND DK PLTG. AFT 153½ SH 1
3	H4650-129-01-49	STRUCTURAL DETAILS
2	STD 129-00-02	WELDING STD.
1		

1 H-449

	ALTERATION	DATE OF ISSUE
	ENGINEERING DISTRIBUTION	
MAIL	OWNERS	4 2 4 2 2 2 2 2 2
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S. NAVY	
	U.S.C.G.	3 3 3 3 3 3 3 3
	JOINER CONT'R.	
	USPH	3 3 3 3 3 3 3 3 3
INSPECTION	OWNER'S INSP.	
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
	COSCHAUB	
OFFICE	HULL DRAFT. - 21	
	MACH. DRAFT. - 22	
	ELEC. DRAFT. - 23	
	OUTFIT. DRAFT. - 25	
	ESTIMATING	
	21-1D WA Wood	
MISC.	PRODUCTION (SCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	11 10 5 9 5 9 10 7 10 7 3 15 15 15 15
	YARD DISTRIBUTION	
YARD	YARD-OFFICE	
	SHIP SUPT	
	PIECE RATE - 11	
	TEST DEPARTMENT	
	Q-ASSURANCE	
	PLANNING	
STRUCTURAL	GROUND ASSEMBLY	
	35 DEPT.	
	P. McNAIR	
	H. LEVY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL - 46	
	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP - 52	
	OUTFIT. #1 PIER	
	PIPE DRAFT. - 52	
	BOILER SHOP - 56	
	OUTSIDE MACH. - 60	
	Brooks	
	ELECTRIC SHOP - 70	
	SHEET MET. SHOP - 74	
	COPPER SHOP - 81	
	PAINT SHOP - 78	
OTHER	WELDING	
	Q-MAT'L	
	MOLD LOFT - 41	
	BRACKET SHOP	
	Quality Control	
	B. Miller	
	Alex Miller	
	TOTAL YARD DIST.	

4650-51 - ALT 2
4650-51 - ALT 3
4650-51 - ALT 4
4650-51 - ALT 4
ALT 5
ALT 6
ALT 7
ALT 8

51 90 FT

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-177-00-01

Sep 1980

8X

FRAME 1 OF 9

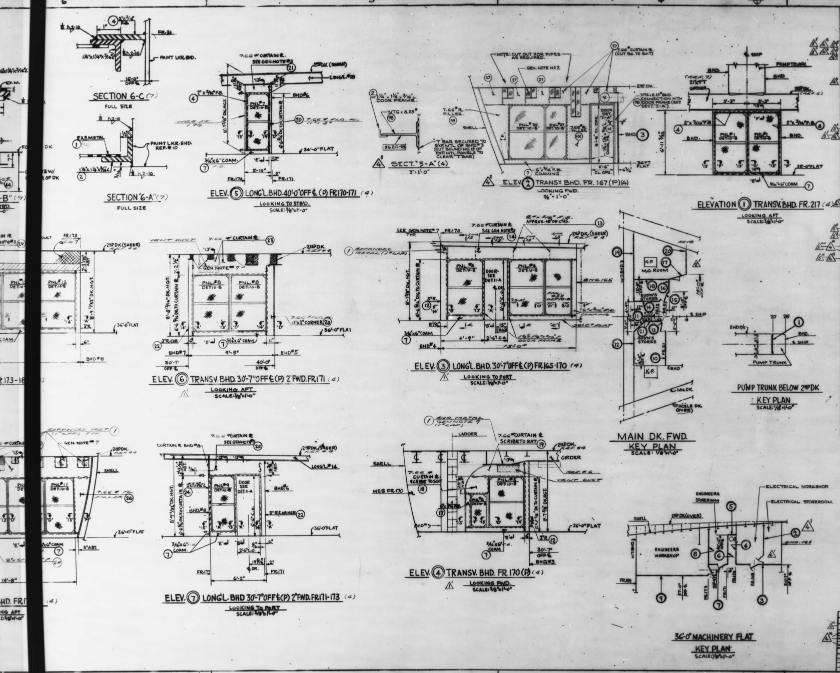
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-177-00-01

Sep 1980

8X

FRAME 2 OF 9

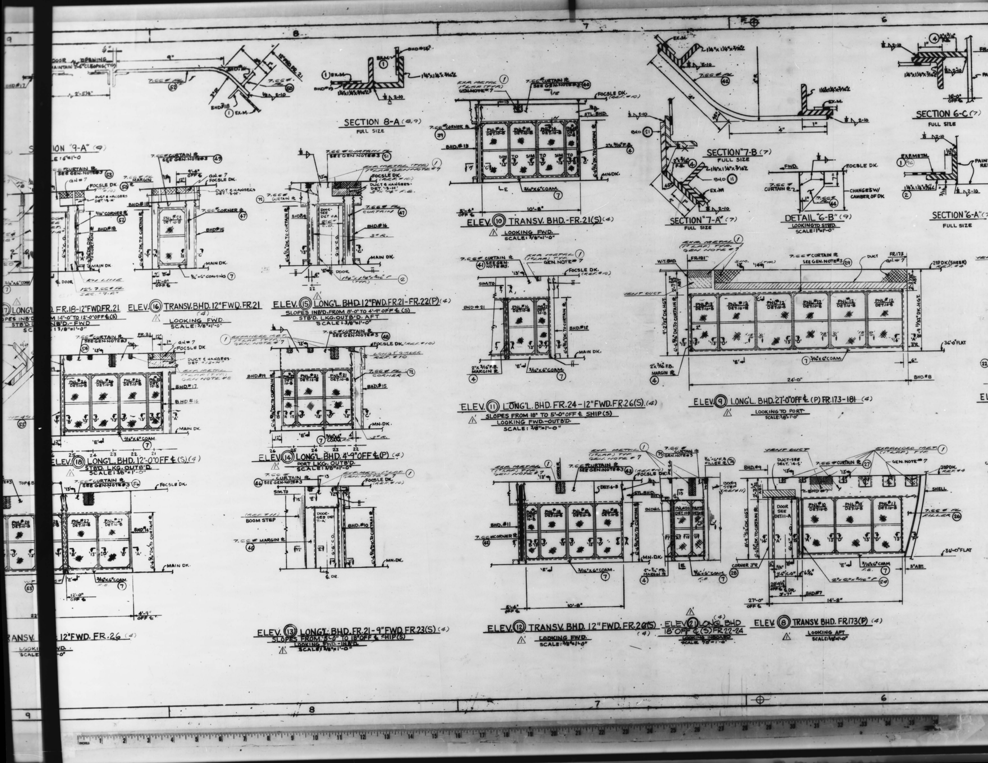


SECTION 6-C (7)
FULL SIZE
SECTION "6-A" (7)
FULL SIZE
ELEV. 5 LONG'L. BHD. 40'-0" OFF ℄ (P) FR.170-171 (4)
LOOKING TO STB'D.
SCALE: 3/8"=1'-0"
SECT. "5-A" (4)
3"=1'-0"
ELEV. 4A TRANSV. BHD. FR. 167 (P) (4)
LOOKING FWD.
3/8"=1'-0"
ELEVATION 1 TRANSV. BHD. FR. 217 (4)
LOOKING AFT
SCALE: 3/8"=1'-0"
ELEV. 6 TRANSV. BHD. 30'-7" OFF ℄ (P) 2' FWD. FR.171 (4)
LOOKING AFT
SCALE: 3/8"=1'-0"
ELEV. 3 LONG'L. BHD. 30'-7" OFF ℄ (P) FR.165-170 (4)
LOOKING TO PORT
SCALE: 3/8"=1'-0"
MAIN DK. FWD.
KEY PLAN
SCALE: 1/8"=1'-0"
PUMP TRUNK BELOW 2ND DK
KEY PLAN
SCALE: 1/8"=1'-0"
ELEV. 4 TRANSV. BHD. FR 170 (P) (4)
LOOKING FWD.
SCALE: 3/8"=1'-0"
ELEV. 7 LONG'L. BHD 30'-7" OFF ℄ (P) 2' FWD. FR.171-173 (4)
LOOKING TO PORT
SCALE: 3/8"=1'-0"
36'-0" MACHINERY FLAT
KEY PLAN
SCALE: 1/8"=1'-0"
ENGINEERS WORKSHOP
ENGINEERS STOREROOM
ELECTRICAL WORKSHOP
ELECTRICAL STOREROOM
M.G. ROOM
BOS'N'S STORES
PUMP TRUNK

ITEM	NAME	QTY.	MATL
1	EXPANDED METAL	72'	STL.
2	PANEL & DOOR FRAMES	105	MILD S
3	REINFORCING F.B. FOR PANELS	10	
4	MARGIN PLATE	7	MILD ST
5	FILLER ℞	1	
6	CORNER BRACKETS FOR PANELS	231	
7	COAMING	10	MILD. S
8	MARGIN PLATE	1	
9	CURTAIN PLATE	1	
10	CURTAIN PLATE	1	
11	CURTAIN PLATE	1	
12	CORNER-3"R	1	
13	REINF. F.B. BRACKETS (TAPERED)	1	
14	CURTAIN PLATE	1	
15	CORNER BRACKETS FOR DOORS	112	
16	REINFORCING F.B. FOR DOORS	9	
17	MARGIN PLATE	1	MILD. ST
18	FILLER PLATE	1	
19	CURTAIN PLATE	1	
20	CORNER (SQUARE)	1	
21	CURTAIN PLATE	1	
22	CORNER-3"R	1	
23	CURTAIN PLATE	1	
24	ANGLE	1	
25	CURTAIN PLATE	1	
26	MARGIN PLATE	1	
27	CURTAIN PLATE	2	
28	CORNER-3"R	1	
29	CURTAIN PLATE	1	
30	DOOR STOP	12	
31	HOLD BACK HOOK	7	
32	STAPLE	13	
33	PADS	24	
34	HASP & STAPLE	12	GALV. S
35	DOOR PULL	12	STEE
36	HINGE	36	GALV. ST'L
37	DOOR STOP	1	STEE
38	CRUTCH TIP (BUMPER)	6	RUBBER
39	CORNER PLATE	2	MILD ST'
40	CURTAIN PLATE	1	
41	CURTAIN PLATE	1	
42	CORNER-3"R.	1	
43	CURTAIN PLATE	1	
44	REINF. BRACKET	1	
45	MARGIN PLATE	1	
46	CURTAIN PLATE	1	
47	CORNER-3 R.	1	
48	CURTAIN PLATE	1	
49	CURTAIN PLATE	1	
50	MARGIN PLATE	1	
51	CURTAIN PLATE	1	
52	CORNER-3"R	1	
53	CURTAIN PLATE	1	
54	CURTAIN PLATE	1	
55	CORNER UPRIGHT	1	
56	CURTAIN PLATE	1	
57	CURTAIN PLATE	1	
58	REINF. BRACKET	1	
59	MARGIN PLATE	1	
60	MARGIN PLATE STIFFENER	40	
61	CORNER-3"R.	1	
62	MARGIN PLATE	1	
63	MARGIN PLATE	1	
64	CURTAIN PLATE	1	

1. ALL PANELS, DOORS & DOORSTOPS S
2. GRIND ALL ROUGH EDGES OR CORNERS LIABL
3. ALL LONG'L. BHDS. TOP OF CURTAIN ℞. SHAL
4. DOOR STOPS & HOLD BACK HOOKS TO BE LO
5. ALL MATERIAL TO BE MILD STEEL (MA) 'C
6. SEE DET. "10-C" & "11-B" FOR TYPICAL WELDING
7. ALL OPENINGS IN CURTAIN PLATES FOR BEA
   WIRE MESH TO FORM COMPLETE RAT-PROOFIN
8. ALL SNIPES TO BE 1/2" RAD., UNLESS OTH
9. ADJACENT PANEL FRAMES SHALL BE C
   & ADJACENT PANELS TO BE SMOOTH
10. ALL WELDING TO BE 1/8 UNLESS NOTE
11. ALL PANELS & DOORS SHALL
    1/2" MESH, FLAT ROLLED, #13
12. DAMAGED GALVANIZED AREAS AT FINAL
    COLD GALVANIZING COATING.

65	CORNER BKT. FOR PANEL	1	STEEL
66	CORNER BKT. FOR PANEL	1	
67	DOOR SUPPORT	2	STEEL
68	HINGE FASTENING BOLTS	117	CRES.
69	LOCK WASHER	117	CRES.
70	#10 HEX NUT	117	CRES.
71	CURTAIN PLATE	1	MILD STEEL
72	CORNER 3" R.	1	
73	CORNER 3" R.	1	
74	MARGIN PLATE	1	
75	CURTAIN PLATE	1	


SECTION 8-A (8,9)
FULL SIZE
SECTION "9-A" (9)
SECTION "7-B" (7)
FULL SIZE
SECTION "7-A" (7)
FULL SIZE
SECTION 6-C (7)
FULL SIZE
DETAIL "6-B" (9)
LOOKING TO STBD.
SCALE: 1"=1'-0"
SECTION "6-A" (7)
FULL SIZE
ELEV. 10 TRANSV. BHD.-FR.21(S) (4)
LOOKING FWD.
SCALE: 3/8"=1'-0"
LONG'L. FR.18-12"FWD.FR.21
SLOPES INB'D. FROM 14'-0" TO 12'-0" OFF ℄ (S)
STB'D. LKG. INB'D.-FWD
ELEV. 16 TRANSV. BHD. 12"FWD. FR.21 (4)
LOOKING FWD.
SCALE: 3/8"=1'-0"
ELEV. 15 LONG'L. BHD. 12"FWD. FR.21-FR.22(P) (4)
SLOPES INB'D. FROM 8'-0" TO 4'-9" OFF ℄ (S)
STB'D. LKG. OUTB'D. AFT
SCALE: 3/8"=1'-0"
ELEV. 11 LONG'L. BHD. FR.24-12"FWD. FR.26(S) (4)
SLOPES FROM 18" TO 5'-0" OFF ℄ SHIP (S)
LOOKING FWD.-OUTB'D.
SCALE: 3/8"=1'-0"
ELEV. 9 LONG'L. BHD. 27'-0" OFF ℄ (P) FR.173-181 (4)
LOOKING TO PORT
SCALE: 3/8"=1'-0"
ELEV. 18 LONG'L. BHD. 12'-0" OFF ℄ (S) (4)
STB'D. LKG. OUTB'D.
SCALE: 3/8"=1'-0"
ELEV. 14 LONG'L. BHD. 4'-9" OFF ℄ (P) (4)
PORT LKG. OUTB'D.
SCALE: 3/8"=1'-0"
ELEV. 13 LONG'L. BHD. FR.21-9"FWD. FR.23(S) (4)
SLOPES FROM 3'-0" TO 18" OFF ℄ SHIP (S)
LOOKING FWD.-INB'D.
SCALE: 3/8"=1'-0"
ELEV. 12 TRANSV. BHD. 12"FWD. FR.26(S) (4)
LOOKING FWD.
SCALE: 3/8"=1'-0"
ELEV. 2 LONG'L BHD. 18" OFF ℄ (S) FR.22-24 (4)
LOOKING INBOARD
SCALE: 3/8"=1'-0"
ELEV. 8 TRANSV. BHD. FR.173(P) (4)
LOOKING AFT
SCALE: 3/8"=1'-0"
TRANSV. 12"FWD. FR.26 (4)
LOOKING FWD.
7.65# CURTAIN PL
SEE GEN. NOTE #3
EXP. METAL (1"FLAP) TYP. GEN. NOTE #7
FOCSLE DK.
MAIN DK.
MN. DK.
3/16"x6" COAM.
7.65# CORNER PL
DUCT & HANGERS
PNL #12 DET. 10-B
DOOR SEE DET. 11-A
BHD. #15
BHD. #16
BHD. #17
BHD. #19
BHD. #21
BHD. #11
BHD. #9
BHD. #8
BHD. #7
VENT DUCT
2ND DK (SHEER)
36'-0" FLAT
SHELL
24'-0"
10'-8"
14'-8"
12'-0" OFF ℄
27'-0" OFF ℄
9
8
7
6

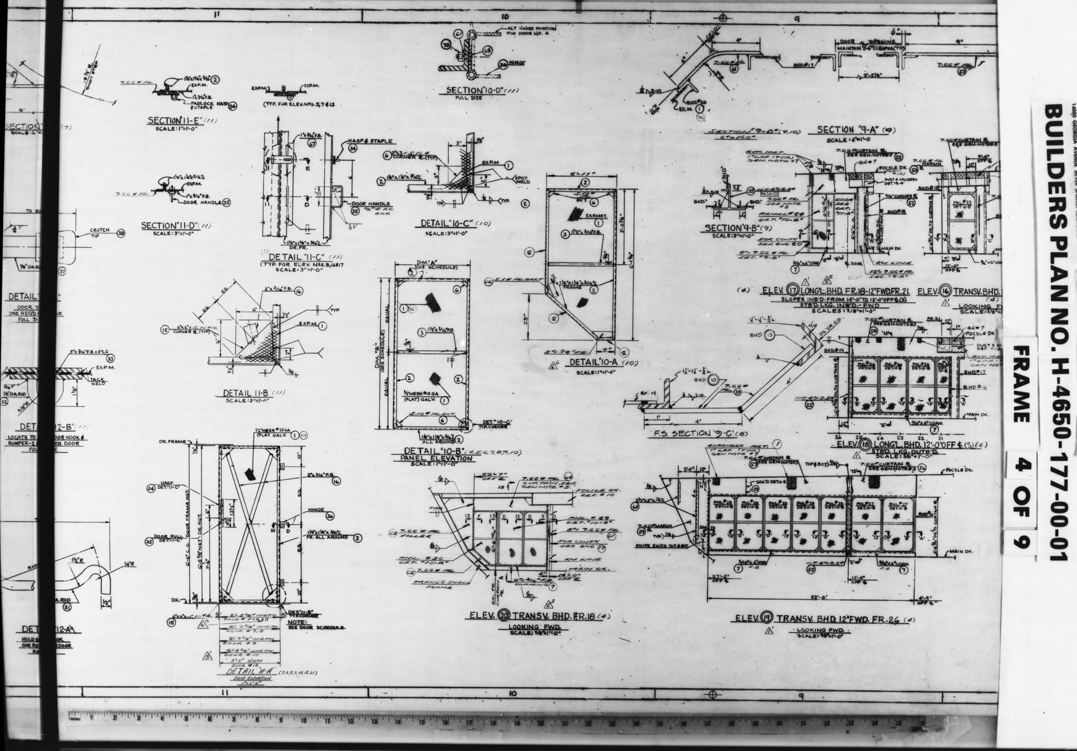
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

BUILDERS PLAN NO. H-4650-177-00-01

FRAME 3 OF 9


SECTION "10-D" (11)
FULL SIZE
ALT HINGE POSITION FOR DOOR NO. 4
HINGE
SECTION 11-E" (11)
SCALE: 1"=1'-0"
PADLOCK HASP & STAPLE
(TYP. FOR ELEV. NOS. 3,7 & 13
SECTION "11-D" (11)
SCALE: 3"=1'-0"
DOOR HANDLE
CRUTCH TIP
DETAIL "11-C" (11)
(TYP. FOR ELEV. NOS. 8, 16 & 17
SCALE: 3"=1'-0"
HASP & STAPLE
DETAIL "10-C" (10)
SCALE: 3"=1'-0"
SPOT WELD
EXP. M.
DETAIL "10-A" (10)
SCALE: 1"=1'-0"
DETAIL 11-B (11)
SCALE: 3"=1'-0"
TACK WELD
DETAIL "10-B" (4,5,6,7,8,9,10)
PANEL ELEVATION
SCALE: 1"=1'-0"
DIM. "A" (SEE SCHEDULE)
DIM. "B" (SEE SCHEDULE)
1/2" MESH #13 GA (FLAT) GALV.
DET. "10-C" TYP. CORNER
ALL AROUND
DETAIL "11-A" (5,6,8,9,18,19,21)
DOOR ELEVATION
1"=1'-0"
NOTE: SEE DOOR SCHEDULE.
HINGE
DOOR PULL DET. "11-C"
HASP DET. "11-C"
DR. FRAME
ELEV. 20 TRANSV. BHD. FR. 18 (4)
LOOKING FWD.
SCALE: 3/8"=1'-0"
ELEV. 19 TRANSV. BHD. 12" FWD. FR. 26 (4)
LOOKING FWD.
SCALE: 3/8"=1'-0"
ELEV. 18 LONGL. BHD. 12'-0" OFF ¢ (S) (4)
STBD. LKG. OUTB'D.
SCALE: 3/8"=1'-0"
ELEV. 17 LONGL. BHD. FR. 18-12" FWD. FR. 21
SLOPES INB'D. FROM 14'-0" TO 12'-0" OFF ¢ (S)
STB'D. LKG. INB'D.-FWD
ELEV. 16 TRANSV. BHD.
SECTION "9-A" (9)
SCALE: 6"=1'-0"
SECTION "9-D" (9,10)
SECTION "9-B" (9)
SCALE: 3"=1'-0"
F.S. SECTION "9-C" (8)
FOCSLE DK.
MAIN DK.
7.66# CURTAIN PL. SEE GEN. NOTE #3
EXPANDED MET.
SNIPE ENDS TOP & BOT.
11
10
9

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

BUILDERS PLAN NO. H-4650-177-00-01

FRAME 4 OF 9

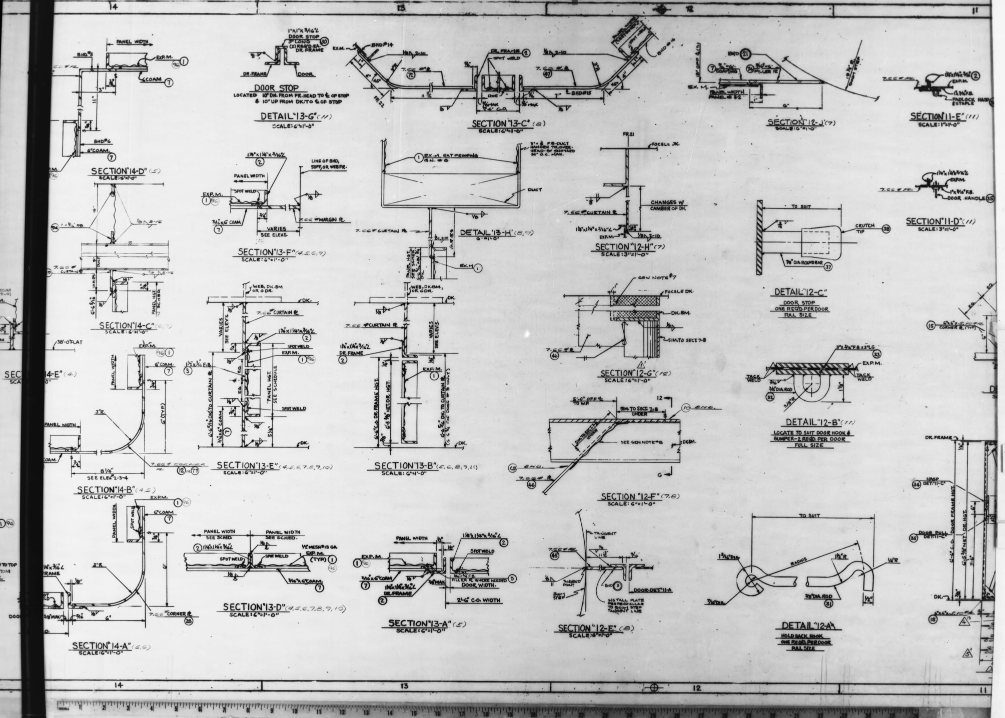
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-177-00-01

Sep 1980

8X

FRAME 5 OF 9



14
13
12
11
DOOR STOP
LOCATED 10" DN. FROM FR. HEAD TO ℄ OF STOP & 10" UP FROM DK. TO ℄ OF STOP
DETAIL "13-G" (11)
SCALE: 6"=1'-0"
SECTION "13-C" (8)
SCALE: 6"=1'-0"
SECTION "12-J" (7)
SCALE: 6"=1'-0"
SECTION "11-E" (11)
SCALE: 1"=1'-0"
SECTION "14-D" (5)
SCALE: 6"=1'-0"
SECTION "13-F" (4,5,6,9)
SCALE: 6"=1'-0"
DETAIL "13-H" (8,9)
6"=1'-0"
SECTION "12-H" (7)
SCALE: 3"=1'-0"
SECTION "11-D" (11)
SCALE: 3"=1'-0"
DETAIL "12-C"
DOOR STOP
ONE REQ'D. PER DOOR
FULL SIZE
SECTION "14-C" (6,7)
SCALE: 6"=1'-0"
SECTION "12-G" (12)
SCALE: 6"=1'-0"
DETAIL "12-B" (11)
LOCATE TO SUIT DOOR HOOK & BUMPER - 2 REQ'D. PER DOOR
FULL SIZE
SECTION "14-E" (4)
SECTION "13-E" (4,5,6,7,8,9,10)
SCALE: 6"=1'-0"
SECTION "13-B" (5,6,8,9,21)
SCALE: 6"=1'-0"
SECTION "12-F" (7,8)
SCALE: 6"=1'-0"
SECTION "14-B" (4,5)
SCALE: 6"=1'-0"
SECTION "13-D" (4,5,6,7,8,9,10)
SCALE: 6"=1'-0"
SECTION "13-A" (5)
SCALE: 6"=1'-0"
SECTION "12-E" (8)
SCALE: 6"=1'-0"
DETAIL "12-A"
HOLD BACK HOOK
ONE REQ'D. PER DOOR
FULL SIZE
SECTION "14-A" (5,6)
SCALE: 6"=1'-0"
PANEL WIDTH
EXP.M.
6" COAM.
SPOT WELD
7.65# CURTAIN ℞
DR. FRAME
CRUTCH TIP
7/8" DIA. ROUND BAR
3/8" DIA. ROD
TO SUIT
RADIUS

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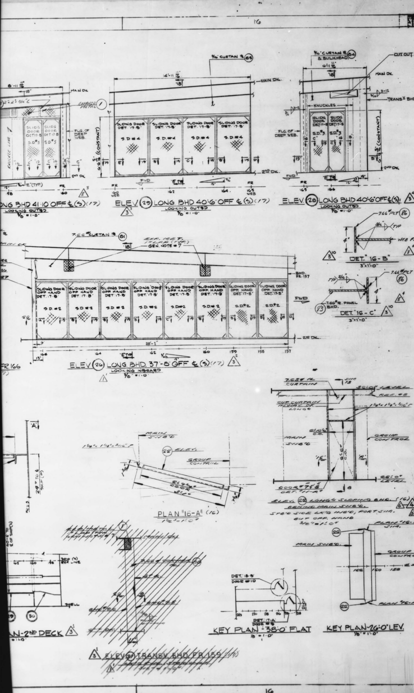
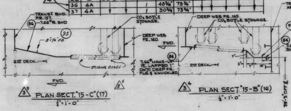
FRAME 6 OF 9



17
16
ELEV. LONG BHD 41'-10 OFF ℄ (S) (17)
LOOKING OUTBD
ELEV. ㉙ LONG BHD 40'-6" OFF ℄ (S) (17)
LOOKING OUTBD
3/8" = 1'-0"
ELEV. ㉘ LONG BHD 40'-6" OFF ℄ (S)
LOOKING OUTBD
3/8" = 1'-0"
CUT OUT FOR WIREWAY
MAIN DK.
TRANS'E BHD. (12" AFT OF FR. 167)
KNUCKLES
FLG. OF DEEP WEB
SLIDING DOOR DET. 17-B
S.D. #4
S.D. #5
2ND DK.
FWD
ELEV. ㉖ LONG. BHD. 37'-8" OFF ℄ (S) (17)
LOOKING INBOARD
3/8" = 1'-0"
SLIDING DOOR OPP. HAND DET. 17-B
S.D. #2
7.66 # CURTAIN ㉛
GEN. NOTE # 7
BHD. FR. 157
DET. "16-B"
3" = 1'-0"
DET. "16-C"
3" = 1'-0"
7.66 # PLT ㊱
WEB FR.
PLAN "16-A" (16)
1 1/2" = 1'-0"
ELEV. ㉒ LONG'L SLOPING BHD. (16)
BEHIND MAIN SWB'D.
STB'D SIDE LK'G INB'D, PORT SIM.
BUT OPP. HAND
3/8" = 1'-0"
GROUP CONTROL
MAIN SWB'D.
DOOR #7 & 8
DET. "11-A"
26'-0" LEVEL
36'-0" LEVEL
KEY PLAN - 2ND DECK
KEY PLAN - 38'-0" FLAT
1/8" = 1'-0"
KEY PLAN - 26'-0" LEV.
1/8" = 1'-0"
PLAN "16-A" STB.
ELEV. TRANSV. BHD. FR. 159 (16)

PANEL SCHEDULE

PANEL Nº	ELEV. Nº	DECK	QTY.	PANEL SIZE DIM "A"	PANEL SIZE DIM "B"	REMARKS
1	1	38'-0" FLAT	2	37 3/4"	76 1/2	DET. 10-B, SECT. 13-D & 13-E
2	2	36'-0" FLAT	1	33 1/4"	49 3/4"	
3	2		1	33"	73 3/4"	
4	3		2	48 3/4"	73 3/4"	
5	4		1	48 3/4"	73 3/4"	
6	4		1	24 3/4"	45"	
7	5		1	30 1/2"	68 3/4"	
8	6		2	48 3/4"	73 3/4"	
9	7		1	35 3/4"	73 3/4"	
10	8		2	48 3/4"	73 3/4"	
11	8		1	42 1/4"	73 3/4"	
12	9		5	48 3/4"	73 3/4"	
13	9	36'-0" FLAT	1	37 3/4"	73 3/4"	
14	10	MAIN DK.	3	37"	73 3/4"	
15	10		1	16 3/4"	73 3/4"	
16	11		1	37"	73 3/4"	
17	11		1	18 7/16"	73 3/4"	
18	12		3	37"	73 3/4"	
19	12		1	17 3/4"	73 3/4"	
20	21		1	23 7/16"	73 3/4"	
21	14		2	37"	73 3/4"	
22	14		1	19"	73 3/4"	
23	16		1	37"	73 3/4"	
24	17		1	30 3/4"	73 3/4"	
25	18		1	22 1/2"	73 3/4"	
26	18		3	37"	73 3/4"	
27	19		2	42 1/16"	73 3/4"	
28	19		5	37"	73 3/4"	
29	20		2	35"	73 3/4"	DET. 10-B SECT. 13-D & 13-E
30	20	MAIN DK.	1	35"	73 3/4"	DET. 10-A
31	2	36'-0" FLAT	2	40"	73 3/4"	DET. 10-B, SECT. 13-D & 13-E
32	21	MAIN DK	1	17 7/16"	73 3/4"	
33	23					
34	27	2ND DK	1	28 5/8"	73 3/4"	
35	3	36'-0" FLAT	1	38 1/4"	73 3/4"	
36	4A		1	48 3/4"	73 3/4"	
37	4A		1	30 3/4"	73 3/4"	

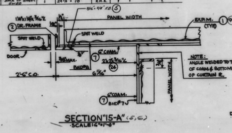


TRANS'E BHD. FR. 157
7.66 # R. BHD
CO2 BOTTLE STOWAGE
DEEP WEB FR. 160.
FWD.
2ND DECK
SLIDING DOORS
PLAN SECT. "15-C" (17)
1/2" = 1'-0"
TRANS'E BHD. 12" AFT OF FR. 167.
DEEP WEB FR. 165.
CO2 BOTTLE STOWAGE.
7.66 # MAKE-UP R. LAPPED 1" ONTO DEEP FR. FLG. & KNUCKLED
3" x 1/4" F.B. STIFF (SECURE WITH 3/16" FILLET WELD)
7.66 # R. BHD.
PLAN SECT. "15-B" (16)
1/2" = 1'-0"
39'-3" OFF ℄

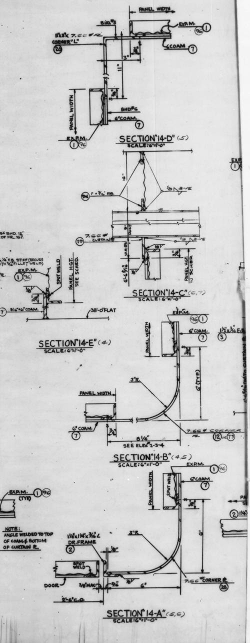
NOTE: FOR SLIDING DOOR SCHEDULE SEE PANEL Nº 20

◦ DOOR ◦ SCHEDULE ◦

DOOR Nº	ELEV. Nº	DECK	LOCATION FROM	LOCATION TO	QTY.	DOOR C.O. SIZE	SWING	REMARKS
1	3	36'-0" MACHY FLAT	ELECT. WORKSHOP & STORE-ROOM	MACHY. SPACE	1	30" x 78"	R.H.R.	DET. 11-A & SECT. 13-B
2	7	36'-0" MACHY FLAT	ENGINEERS STOREROOM	MACHY. SPACE	1	30" x 78"	R.H.R.	
3	8	36'-0" MACHY FLAT	ENGINEERS WORKSHOP	MACHY. SPACE	1	30" x 78"	R.H.R.	
4	15	MAIN DK.	HAWSER RM.	BOS'N'S STOR. (P)	1	30" x 78"	R.H.R.	
5	17	MAIN DK.	HAWSER RM.	M.G. ROOM	1	30" x 78"	R.H.R.	
6	13	MAIN DK	HAWSER RM.	BOS'N'S STOR. (S)	1	30" x 78"	R.H.R.	
7	22	26'-0" LEV	P		1	34 1/2" x 78"	L.H.R.	
8	22	26'-0" LEV	S		1	34 1/2" x 78"	R.H.R.	
9	DET. 17-A	38'-0" FLAT			1	32 1/2" x 78"	R.H.	
10	DET. 18-B	38'-0" FLAT			1	33" x 78"	R.H.	
11	ELEV 4-A	36'-0" MACHY FLAT	ELECT. WORKSHOP	ELECT. STOREROOM	1	30" x 78"	L.H.R.	
12	"21-A"	SUN DECK	EMER'G GEN RM	BACK OF EMER'G SWBD	1	24 3/4" x 78"	R.H.R.	



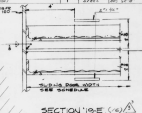
3/16" x 3/4" F.B. ⑤
PANEL WIDTH
EXP.M. (TYP) ①96
1 1/4" x 1 1/4" x 3/16" L
② DR. FRAME
SPOT WELD
DOOR
2'-6" C.O.
BHD #6
⑦ 6" COAM.
NOTE: ANGLE WELDED TO TOP OF COAM. & BOTTOM OF CURTAIN R.
SECTION "15-A" (5,6)
SCALE 6" = 1'-0"



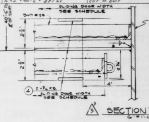
PANEL WIDTH
EXP.M. ①96
⑦ 6" COAM
CORNER "L" ㉖
BHD #6
PANEL WIDTH
SECTION "14-D" (5)
SCALE: 6" = 1'-0"
7.66 # CURTAIN ㉙
SPOT WELD
PANEL HGT. SEE SCHED.
38'-0" FLAT
SECTION "14-E" (4)
SCALE: 6" = 1'-0"
SECTION "14-C" (6,7)
SCALE: 6" = 1'-0"
3" R.
7.66 # CORNER R ⑫ or ⑬
SEE ELEV. 2-3-4
SECTION "14-B" (4,5)
SCALE: 6" = 1'-0"
1 1/4" x 1 1/4" x 3/16" L DR. FRAME ②
DOOR
2'-6" C.O.
7.66 # CORNER R ㉘
SECTION "14-A" (5,6)
SCALE 6" = 1'-0"

L/M (CONT.)

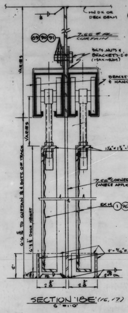
	ITEM	NAME	QTY	MATL	SPECS.	DESCRIPTION	REMARKS	SOURCE
	76	C -3" R.	2	MILD. STL.	ABS GR A	14"×10'-0"×7.66# PL	SECTION '18-C'	
	77	C N PL	1	↓	↓	3'-6"×16'-2"×7.66# PL	CUT TO SUIT	
	78		1			3'-6"×2'-6 1/2" 7.66# PL	SCRIBE TO SUIT	
△3	~~79~~		~~1~~			~~4'-9"×4'-6"×7.66# PL~~	↓	
	~~80~~	~~C R PL~~	~~1~~			~~33"×9'-3"×7.66# PL~~	~~SECTION '20-B'~~	
	81	C N PL	1			2'-6"×28'-0"×7.66# PL (TO CUT)	CUT TO SUIT	
	82	C -3" R.	1			12"×9'-0"×7.66# PL	SECTION '20-A'	
	83	C N PL	1			3'-9"×2'-2 1/8"×7.66# PL	CUT TO SUIT	
△3	84		2			4'-0"×12'-0"×7.66# PL	SCRIBE TO SUIT	
△3	85		1			2'-3"×14'-11 11/16"×7.66# PL	↓	
	86		2	↓	↓	3'-0"×9'-0"×7.66# PL	↓	
△3	87	H STAPLE	5	STEEL GALV.	COMM'L.	3" HINGED HASP	SIM OR EQ TO H.S. GETTY CAT. NO. 2903.	
	88	DOOR HANGER, TRACK & BRKT.	SEE REMARKS	↓	ALLITH # OR EQ		(32) HANGERS (105) ALLITH #210-X OR EQ TRACK (62) BRKTS	
	89		31	CRES	COMM'L.	1/2" NOM DIA × 1 1/2", THREAD LGTH. 3/4" HEX.		
	90	N	↓	↓	↓	1/2" NOM. DIA. HEX. HD.		
	91	ER.	↓	↓	↓	1/2" NOM DIA. STANDARD WASHER		
△8	92	R FOR SLIDING DOORS	263 L.F.	MILD STEEL	ABS GR A	2"×3/16" F.B.	CUT TO SUIT	
	93	C N PL.	1			2'-6"×18"×7.66# PL	SCRIBE TO SUIT	
	94	R B FOR RATPROOFING	4			1"×3/16" F.B.×20'-0"	CUT TO SUIT	
	95		4	↓	↓	3×1/4 F.B.	3'-6 3/4" LG (EACH)	
△3	96	RANDED METAL	45	MILD STL	GEN NOTE 12	FLAT ROLLED 1/2" WIREMESH, #13GA	48"×96" PANELS	
	97	BHD. STIFFENER	1	MILD. STL.	ABS GR. "A"	3"×1/4" F.B.	25 FT. (TO CUT) DETS "15-B" & "15-C".	
△4	98	V 8.25#	1			9'-0" LONG	CUT TO SUIT ELEV. "4-A".	
	99	R RATE.	1			3'-6"×6'-6"×7.66# PL.	↓	
	100	R RATE.	1		↓	3'-0"×6'-6"×7.66# PL.	↓	
△5	101	ED METAL	1		COMM'L	1/2" WIREMESH, #13GA - FLAT ROLLER	80"×2'-0" - CUT TO SUIT - DET. '11-A'	
	102	PLT	1	↓	ABS GR. 'A'	2'-3"×2'-1"×7.66# PLT	CUT TO SUIT - SEE ELEV 21-A	
△8	103	SUPPORT	1	STEEL	ABS GR 'A'	2"×2"×3/16" L - 3 FT LG	CUT TO SUIT	


WEB FR 160
4'
2"×3/16"
SLIDING DOOR WIDTH SEE SCHEDULE

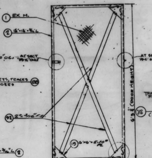
SECTION '19-E' (16) △3
6"=1'-0"


40'-6" TO ℄ OF SHIP
SLIDING DOOR WIDTH SEE SCHEDULE
BHD #29
WEB FR.165
4 2"×3/16" F.B.
SLIDING DOOR WIDTH SEE SCHEDULE

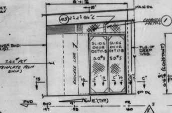
△3 SECTION '19-D' (16)
6"=1'-0"


MN DK OR DECK BEAM
7.66# PL CURTAIN
BOLTS, NUTS & BRACKETS 2'-0" O.C. (MAX-NUM)
BRACKETS, TRACKS & HANGERS 88
VARIES
G-G 5/8" TO CURTAIN PL & BOTT. OF TRACK
G-G 3/4" DOOR HEIGHT
1 1/4"×1 1/4"×3/16" L 2
7.66# CORNER PL (WHERE APPLICABLE) 80 OR 86
EX.M. 1 96
2"×3/16" F.B. 4
2 5/8"
2ND DK

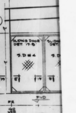
SECTION '18-E' (16,17)
6"=1'-0"


1 EX.M.
2 1 1/4"×1 1/4"×3/16" L
AT SECT. 19-C ONLY
92 2"×3/16" FL
15 G'-0"×5.10# PL
G'-3 3/4" (DOOR HEIGHT)
VARIES - SEE SLIDING DOOR SCHEDULE
SIM. TO DET. 11-B
12 3/4

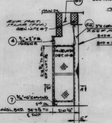
(16,17) DETAIL '17-B'
1"=1'-0"


MAIN DK
EXPANDED METAL 1
103
TRANSV BHD FR.37
7.66# PLT (TEMPLATE FROM SHIP)
SLIDING DOOR DET. 17-B
S.D. #5
KNUCKLE LINE
FLG. OF DEEP WEB
FWD
BHD 26
FR 160

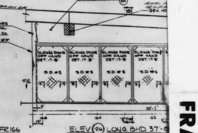
ELEV (30) LONG BHD 41'-10" OFF ℄ (S) (17) △3
LOOKING OUTBD
3/8"=1'-0"


SLIDING DOOR DET. 17-B
S.D. #4
FR 160
FWD

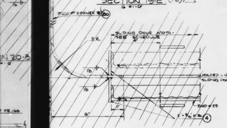
ELEV (29) LON
△3


MAIN DK
7.66# PL CURTAIN PL
EXP. MET. 15LAP (TYP.) GEN. NOTE #7
4 3/4"×2" F.B. MARGIN
7.66# CORNER 22
BHD #26
BHD #27
7 3/16"×6" COAMING
LONGL. BHD. 34'-9 3/8" TO ℄ SHIP
2ND DK
6"

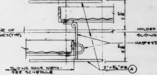
ELEV (27) TRANSV BHD. 13" AFT. FR. 166 (17) △1
LOOKING FWD.
3/8"=1'-0"


MAIN DK
7.66# CURTAIN PL 81
SLIDING DOOR OPP HAND DET. 17-B
S.D. #2
164
162
22

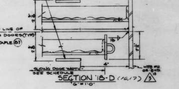
ELEV (26) LONG BHD 37'-8 △1
LOOKING INBOARD
3/8"=1'-0"


7.66# CORNER PL 80
SLIDING DOOR WIDTH - SEE SCHEDULE
MOLDED LINE OF SLIDING DOORS (TYP)
BHD #25
2-3/16 F.B. 4
FR.166

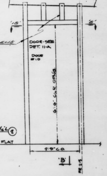
ON '20-B
=1'-0"


SLIDING DOOR WIDTH SEE SCHEDULE
EQUAL EQUAL
MOLDED LINE OF SLIDING DOORS (TYP)
HASP & STAPLE 87
SLIDING DOOR WIDTH SEE SCHEDULE
2"×3/16" F.B. 4

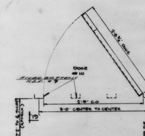
SECTION '19-C' (16,17)
6"=1'-0"


4 2"×3/16" F.B.
SLIDING DOOR WIDTH - SEE SCHEDULE
SLIDING DOOR WIDTH SEE SCHEDULE
WEB FR OR BHD

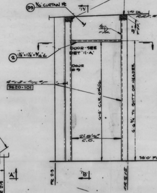
SECTION '18-D' (16,17) △3
6"=1'-0"


SIM TO 13
2ND DK REF. ES
FIXED BATTENS REF. #7
DOOR-SEE DET. 11-A
DOOR #10
G'-0" CLR. OPNG
2'-9" C.O.
38'-0" FLAT
'B'
FR 215

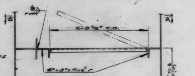
ELEV '19-A' (16)
LKG TO PORT
3/4"=1'-0"


2'-8 1/2" DOOR
DOOR #10
FIXED BATTENS REF. #9
2'-9" C.O.
3'-0" CENTER TO CENTER
7'-5" TO ℄ SHIP (APPROX)
19
'A'
FR 215

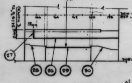
DETAIL '18-B' (16)
1 1/2"=1'-0"


SEE GEN. NOTE #7 EXPANDED MET. 1 (1" LAP)
83 3/16" CURTAIN PL
2ND DK
REF. #5
2 1 1/4"×1 1/4"×3/16" L
DOOR-SEE DET. 11-A
DOOR #9
9620-101
G'-G" CLR. OPNG
G'-G 3/4" TO BOTT. OF HEADER
2'-8 1/2" C.O.
38'-0" FLAT
'B'
FR 215

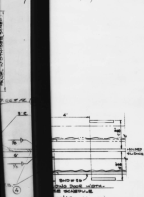
ELEV '18-A' (16)
LKG TO STBD
3/4"=1'-0"


'18'
'A'
2'-8 1/2" C.O.
4"×3"×5/16" L
29'-0" TO ℄ SHIP (P)
FR 213

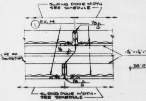
DETAIL '17-A' (16)
1 1/2"=1'-0"


40'-6" TO ℄ OF SHIP
34'-9 3/8" TO ℄ SHIP
27
28
26
29
30
SHELL

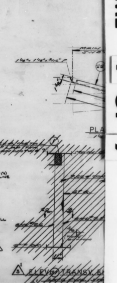
KEY PLAN-2ND DECK △3
1/8"=1'-0"


7.66# PL
3'-R
4'
BHD #26
4

ON '20-A' (17)
6"=1'-0"


SLIDING DOOR WIDTH SEE SCHEDULE
1 EX. M
MOLDED LINE OF SLIDING DOORS (TYP)
1 1/4"×1 1/4"×3/16" L 2
SLIDING DOOR WIDTH - SEE SCHEDULE

SECTION '19-B' (16,17)
6"=1'-0"


MAIN SWGR
1 3/4"×1 3/4"×3/16" L
22
PLA

△3 ELEV (31) TRANSV. B

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-177-00-01

8X

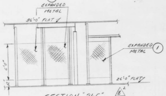
FRAME 7 OF 9

SLIDING DOOR LIST

SD.#	ELEV.#	DECK	QTY	W × H	REMARKS
~~1~~	~~25~~	~~2ND DK.~~	~~4~~	~~3'-5⅝" × 6'-3⅝"~~	~~SECTS '18-E', '19-B', '19-C', '20-A'~~
2	26	2ND DK.	8	3'-5⅝" × 6'-3⅝"	SECTS '18-E', '19-B', '19-C', '20-A'.
3	28	↓	2	2'-0⅝" × 6'-3⅝"	↓
4	29	↓	4	3'-9⅝" × 6'-3⅝"	↓
5	30	↓	2	2'-0⅝" × 6'-3⅝"	↓

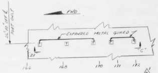
L/M (CONT.)

ITEM	NAME	QTY	MATL	SPECS.	DESCRIPTION
76	CORNER - 3" R.	2	MILD STL.	ABS GR A	14" × 10'-0" × 7.66#
77	CURTAIN PL	1	↓	↓	3'-6" × 16'-3" × 7.66#
78	↓	1	↓	↓	3'-6" × 8'-6½" 7.66
~~79~~		~~1~~	↓	↓	~~4'-9" × 8'-6" × 7.66#~~
~~80~~	~~CORNER PL~~	~~1~~	↓	↓	~~12" × 9'-3" × 7.66#~~
81	CURTAIN PL	1	↓	↓	2'-6" × 28'-0" × 7.66#
82	CORNER - 3" R.	1	↓	↓	12" × 9'-0" × 7.66#
83	CURTAIN PL	1	↓	↓	3'-9" × 8'-8⅛" × 7.66
84	↓	2	↓	↓	4'-0" × 12'-0" × 7.66
85	↓	1	↓	↓	2'-3" × 14'-11 11/16" × 7.66
86	↓	2	↓	↓	3'-0" × 9'-0" × 7.66
87	HASP & STAPLE	5	STEEL GALV.	COMM'L.	3" HINGED HASP
88	SLIDING DOOR HANGER, TRACK & BRKT.	SEE REMARKS	↓	ALLITH W/MORSE	
89	BOLT.	31	CRES	COMM'L.	½" NOM DIA × 1½" THREAD L
90	NUT.	↓	↓	↓	½" NOM. DIA. HEX, HD.
91	WASHER.	↓	↓	↓	½" NOM DIA. STANDAR
92	REINF. F.B. FOR SLIDING DOORS	243 L.F.	MILD STEEL	ABS GR A	2" × 3/16" F.B.
93	CURTAIN PL.	1	↓	↓	2'-6" × 18" × 7.66#
94	REINF. F.B FOR RATPROOFING	4	↓	↓	1" × 3/16" F.B × 20'-0"
95	↓	4	↓	↓	3 × ¼ F.B.
96	~~EXPANDED METAL~~	45	MILD STL	GEN NOTE 12	½" WIREMESH, #1
97	PANEL BHD. STIFFENER	1	MILD. STL.	ABS GR. "A"	3" × ¼ F.B.
98	WT 6 × 8.25#	1	↓	↓	9'-0" LONG
99	FILLER PLATE	1	↓	↓	3'-6" × 6'-6" × 7.66# PL
100	FILLER PLATE:	1	↓	↓	3'-0" × 6'-6" × 7.66# PL
101	EXPANDED METAL	1	↓	COMM'L	½" WIREMESH, #13 GA-FLAT
102	CURTAIN PLT	1	↓	ABS GR. "A"	2'-3" × 2'-1" × 7.66# PLT
103	TRACK SUPPORT	1	STEEL	ABS GR. "A"	2" × 2" × 3/16" L - 3 FT



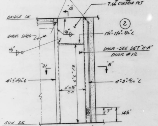
①
EXPANDED METAL
36'-0" FLAT
EXPANDED METAL ①
6'-0"
12
26'-0" FLAT
8

SECTION "21-C"
¼" = 1'-0"



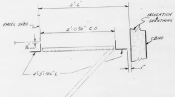
FWD
26'-10" OFF ℄ PORT ONLY
EXPANDED METAL GUARD
"21"
"C"
166
168
170
171
172
8

26'-0" FLAT (PORT ONLY)
KEY PLAN
¼" = 1'-0"



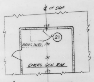
3/16" TYP
102
7.66# CURTAIN PLT
"13"
BRIDGE DK
②
1/8"
EMERG SWBD
1½" × 1½" × 3/16" L
1/8"
DOOR - SEE DET "11-A" DOOR #12
"21"
"B"
6'-4" CO
4" × 3" × 5/16" L
2'-0¾" C.O.
4" × 3" × 5/16" L
7"
14½"
SUN DK
173
"B"
172
5

ELEVATION "21-A"
LOOKING TO PORT
½" = 1'-0"



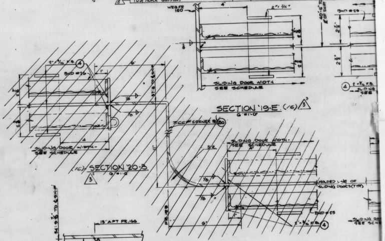
2'-6"
INSULATION & SHEATHING
EMERG SWBD
2'-0¾" C.O.
BHD
½"
4" × 3" × 5/16" L
1"
5

SECTION "21-B"
1½" = 1'-0"



℄ OF SHIP
172
21
EMERG SWBD
173
174
EMERG GEN RM
175
5

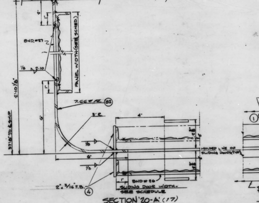
SUN DECK
KEY PLAN
3/16" = 1'-0"



WEB FR 160
4"
2" × 3/16"
40'-6" TO ℄ OF SHIP
BHD #29
2⅜"
2⅜"
SLIDING DOOR WIDTH SEE SCHEDULE
④ 2" × 3/16" F.B.
SLIDING SEE
2" × 3/16" F.B. ④
6"
BHD #26
1"
37'-8" TO ℄ SHIP
1/8
1/8
4
SLIDING DOOR WIDTH - SEE SCHEDULE
7.66# CORNER PL ⑧⓪
SLIDING DOOR WIDTH - SEE SCHEDULE
4"
3"R
1/8
1/8
MOLDED LINE OF SLIDING DOORS (TYP)
FR. 159
BHD #25
1"
6"
2" × 3/16" F.B. ④
SLIDING DOOR SEE SCHEDULE
3

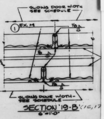
SECTION '19-E' (16) 3
6" = 1'-0"

(16) SECTION '20-B' 3
6" = 1'-0"



34'-9 7/8" TO ℄ SHIP
13" AFT FR. 166
2"
1"
BHD. #27
PANEL WIDTH (SEE SCHED.)
1/8 2-10
1"
2'-10⅛"
7.66# PL ⑧②
3"R.
6"
37'-8" TO ℄ SHIP
4"
1/8
1/8
MOLDED LINE OF SLIDING DOORS (TYP)
6"
BHD #26
1"
2" × 3/16" F.B. ④
SLIDING DOOR WIDTH - SEE SCHEDULE

SECTION '20-A' (17)
6" = 1'-0"



SLIDING DOOR WIDTH SEE SCHEDULE
① EX. M
1/8
1/8
1/8
SLIDING DOOR WIDTH - SEE SCHEDULE

SECTION '19-B' (16, 17
6" = 1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

BUILDERS PLAN NO. H-4650-177-00-01

FRAME 8 OF 9

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-177-00-01

Sep 1980

8X

FRAME 9 OF 9

49957 (Rev.A 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING

THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C–25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860–0 Flux)		CWE 301 SAW (Single) CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A–514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3

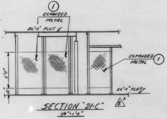
21

20

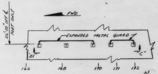
SLIDING DOOR LIST

SD.#	ELEV.#	DECK	QTY	W x H	REMARKS
~~1~~	~~46~~	~~01R DK.~~	~~4~~	~~[illegible]~~	~~SECTS '18-E', '19-B', '19-~~
2	26	2ND DK.	8	3'-5[illegible]×6'-3[illegible]	SECTS '18-E', '19-B', '19-C
3	28		2	2'-0[illegible]×6'-3[illegible]	
4	29		4	3'-9[illegible]×6'-3[illegible]	
5	30		2	2'-0[illegible]×6'-3[illegible]	

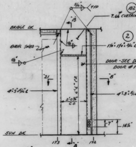
3 2
3 7
3 6


①
EXPANDED METAL
36'-0" FLAT
EXPANDED METAL ①
6'-0"
12"
26'-0" FLAT
8 2

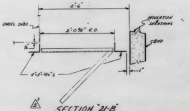
SECTION "21-C"
1/4"=1'-0"


FWD
26'-10" OFF ℄ PORT ONLY
EXPANDED METAL GUARD
"21"
"C"
166
168
170
171
172
8 1

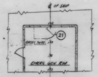
26'-0" FLAT (PORT ONLY)
KEY PLAN
1/4"=1'-0"


3/16" TYP
102
7.66# CURTAIN PLT
"B"
BRIDGE DK
2
EMERG SWBD
1/8"
1 1/4"×1 1/4"×3/16" L
DOOR - SEE DET "11-A"
DOOR #12
"21
"B"
4"×3"×5/16" L
6'-6" CL
2'-0 3/4" C.O.
4"×3"×5/16" L
7"
14 1/2"
SUN DK
173
"B"
172
5 3

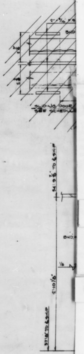
ELEVATION "21-A"
LOOKING TO PORT
1/2"=1'-0"


2'-6"
EMERG SWBD
2'-0 3/4" C.O.
INSULATION & SHEATHING
SBHD
1/2"
4"×3"×5/16" L
1"
5 3

SECTION "21-B"
1 1/2"=1'-0"


℄ OF SHIP
172
21
EMERG SWBD
173
174
EMERG GEN RM
175
5 3

SUN DECK
KEY PLAN
3/16"=1'-0"


2"×3/16" F.B
BHD
2'-8"
2'-8"
SLIDING DOOR SEE SCHEDULE
34'-9 7/8" TO ℄ SHIP
BHD
1/8
2'-10 1/8"
37'-8" TO ℄ SHIP

21

20

BILL OF MATERIAL (PER. SHIP)

Nº REQ'D	DESCRIPTION	MATERIAL.	MAT'L SPECS	PATTERN	REMARKS	DET. Nº	REQN. Nº
1	CONSTANT TENSION MOORING WINCH.	VARIOUS			R.H. NO GYPSY HEAD (LAKE SHORE DWG: 58254)	5-B	22-500025-E
1	↓	↓			R.H.	↓	↓
1	↓	↓			L.H.	↓	↓
12	16" DOUBLE MOORING BITT.	STEEL	ASTM A-131		BETH. STD. DWG: 222-00-4	5-A	UAO
10	14" x 24" CLOSED MOORING CHOCK.		ASTM A515 GR.55		BETH. STD. DWG. 222-00-1 (TYPE "A")	7-A/8-D 9-D	↓
3	UNIVERSAL ROLLER FAIRLEAD. (SHORT BASE)	VARIOUS			VENDOR'S DWG. TO BE ADDED LATER	10-G 10-E	21-504186
4	15" DIA. ROLLER FAIRLEAD.				BETH. STD. DWG. 222-00-5.	5-B 13-B	UAO
50	1" DIA. I.P.S. SOLID PLUG.	MAL. IRON	COMM.		SIM. TO FLAGG FITTING CAT. I-64, FIG. 1074.	VARIOUS	
6	3'-5" x 16" x 30.63# PL. EA. (CHOCK BASE PL.)	STEEL	ABS GR."A"		CUT TO SUIT DET. "7-C".	7-C	
6	3'-3" x 6" x 30.63# PL. EA. (OUTBD PL.)				"8-A" & "8-B"	8-A 8-B	
6	3'-3" x 6" x 30.63# PL. EA. (INBD. PL.)				"8-A", "8-B" & "7-B".	8-A/8-B 7-B	
12	9" x 16" x 30.63# PL. EA. (END PLs.)				"7-C" & "8-A".	7-C 8-A	
6	12" x 3" x 30.63# PL. EA. (STIFF.)				"7-C" & "8-B".	7-C 8-B	
1	$1\frac{1}{4}$" x $\frac{3}{16}$" F.B. (BACKING BAR)				135 LINEAR FEET (TO CUT).	VARIOUS	
2	2'-0" x 18" x 20.42# PL. (TOP BRKT.).				CUT TO SUIT DET. "8-C" & "8-D".	8-C 8-D	
2	20" x 3'-6" x 25.53# PL. (INBD. SKIRT).				"8-B" & "8-C".	8-B 8-C	
4	20" x 18" x 25.53# PL. (END SKIRT).				"8-B".	8-B	
2	18" x 3'-6" x 25.53# PL. (INBD. SKIRT).				"9-B" & "9-C".	9-B 9-C	
4	18" x 18" x 25.53# PL. (END SKIRT).				"9-B"	9-B	
4	4" x 8" x 20.42# PL. (CONN. BRKT).				"9-A"	9-A	
1	4'-8" x 4'-8" x 30.63# PL. (FACE PL. BOW)				"10-H" & "10-I".	10-H 10-I	
2	4'-8" x 5'-4" x 30.63# PL. (FACE PL. FR. 41)				"10-F" & "10-I."	10-F 10-I	
3	4'-8" x 2'-0" x 30.63# PL. (TOP PL.)				CUT TO SUIT TWO DIFFERENT LOCATIONS (DET. "11-C"	11-C	
2	2'-0" x 4'-8" x 30.63# PL. (SIDE PLs. BOW).				CUT TO SUIT DET. "10-H" & "11-D"	10-H 11-D	
4	2'-0" x 5'-4" x 30.63# PL. (SIDE PLs. FR. 41)				"10-F" & "11-E"	10-F 11-E	
2	2'-0" x 2'-0" x 40.84# PL. (BRKTS. BOW).				"10-G".	10-G	
4	2'-0" x 2'-8" x 40.84# PL. (BRKTS. FR. 41).				"10-E".	10-E	
3	4'-8" x 2'-0" x 30.63# PL. (BASE PLs.).				"10-E" & "10-G".	10-E 10-G	
6	11" x $24\frac{1}{2}$" x 20.42# PL. (SIDE ACCESS PLs).				"11-B".	11-B	↓
6	11" x $24\frac{1}{2}$" x $\frac{1}{4}$" THK. GASKET. (SIDE ACC. PLs).	NEOPRENE	COMM.		"11-A" & "11-B".	11-A 11-B	21-504124
6	12" x 12" x 20.42# PL. (TOP ACCESS PLs).	STEEL	ABS GR."A"		"11-F".	11F	UAO
6	12" x 12" x $\frac{1}{4}$" THK. GASKET. (TOP ACCESS PLs).	NEOPRENE	COMM.		"11-F".	11-F	21-504124
288	$\frac{3}{8}$" DIA. FLAT HD. MACH. SCREWS ($1\frac{1}{4}$" LG. EA.)	STAINLESS STEEL 18-8	COMM.		16 THD. (McMASTER-CARR CAT. 83 PG. 1392 # 91781 D 626.)	11-B 11-F	21-504130
1	3" HALF-ROUND BAR. (54 LINEAR FT.).	STEEL	ABS GR."A"		CUT & SHAPE TO SUIT DET. "10-C" & "10-D".	10-C 10-D	UAO
1	$\frac{3}{4}$" DIA. ROUND BAR. (8 LINEAR FT.).				"12-G".	12-G	
3	2'-8" x 4'-2" x 20.42# PL. (COVER)				"12-E".	12-E	
1	2" WIDE x 1" THK. GASKET (45 LINEAR FT.).	NEOPRENE	COMM.		"12-C" & "12-D".	12-C 12-D	21-504124
1	$1\frac{1}{4}$" x $\frac{1}{4}$" F.B. RETAINERS (135 LINEAR FT.).	STEEL	ABS GR."A"		"12-D" & "12-E".	12-D 12-E	UAO
15	4" x $5\frac{1}{2}$" x 30.63# PL. (SPACER).				"12-B".	12-B	
15	$3\frac{1}{2}$" x 7" x 30.63# PL. (DOGS).				"12-B."	12-B	
30	$3\frac{1}{4}$" x $2\frac{3}{4}$" x 30.63# PL. (BOLT PAD).				"12-A".	12-A	
1	1" DIA. RD. BAR (BOLT SHANK).				5 LINEAR FT. (CUT & THREAD TO SUIT DET. "11-H.)	11-H.	
15	3" x 3" x 40.84# PL. (BOLT BOSS).				CUT & SHAPE TO SUIT DET. "11-H.	11-H.	↓
1	$1\frac{1}{2}$" DIA. ROUND BAR (DOG PIN).	STAINLESS STEEL	TYPE 416		8 LINEAR FT. (CUT TO SHAPE PER DET. "11-I").	11-I	21-504142
15	$\frac{3}{16}$" DIA. COTTER PIN.				$1\frac{1}{2}$" LG. (DET. "11-I").	11-I	21-504130
1	$2\frac{1}{2}$" DIA. ROUND BAR (HINGE PIN).				3 LINEAR FT. (CUT TO SHAPE PER DET. "12-J".)	12-J	21-504142
6	$\frac{1}{4}$" DIA. COTTER PIN.				2" LG. (DET. "12-J").	12-J	21-504130
15	WASHER FOR 1" DIA. BOLT.				$1\frac{1}{16}$" I.D. x 2" O.D. x $\frac{1}{8}$" THK. EA. (DET. "12-C").	12-C	21-504130
15	HEAVY HEX. NUT FOR 1" DIA. BOLT.	BRASS	COMM.		8-NC 2 THDS. (DET. "12-C").	12-C	↓
12	8" x 6" x 30.63# PL. (HINGE PAD).	STEEL	ABS GR."A"		CUT TO SUIT DET. "13-A".	13-A	UAO
6	7" x 14" x 30.63# PL. (HINGE BLADE).				"13-A"	13-A	
1	4" x $\frac{3}{4}$" F.B. (VERT. STIFF).				18 LINEAR FT. (DET. "13-A" & "12-I".)	13-A 12-I	
1	4" x $\frac{3}{4}$" F.B. (HORIZ. STIFF).				12 LINEAR FT. (DET. "12-H").	12-H	
4	5'-0" x 11'-0" x 30.63# PL. (FAIRLEAD FDN).				DET. "13-B".	13-B	
4	2'-0" x 2'-0" x 30.63# PL. (FAIRLEAD BASE).				DET. "13-B".	13-B	↓
4	3'-2" x 18" x 11.25# PL. EA. (DIAMOND SAFETY PL.)				CUT AND SHAPE EA. PL. TO SUIT DETS. "4-B" & "4-C".	4-B 4-C	UAO
8	14" x 8" x 10.21# PL. EA.	↓	↓			4-B 4-C	↓

CONTINUED IN PANEL Nº 15.

• GENERAL NOTES •

ELDING TO BE IN ACCORDANCE WITH ABS RULES.
STRUCTURAL MATERIAL TO BE MILD STEEL (MA) CONFORMING TO
GRADE "A", EXCEPT AS NOTED.
SNIPES TO BE $1\frac{1}{2}$" RADIUS, UNLESS OTHERWISE NOTED.
IONS OF ALL BITTS ONBOARD SHIP TO BE APPROVED BY OWNER'S
CTOR PRIOR TO FINAL WELDING.
OF BITTS TO FOLLOW SHEER AND SHALL BE LEVEL ATHWARTSHIP.
LOCATION, HEIGHT AND INCLINATION OF ROLLER FAIRLEADS
CONICAL BASES, SHALL BE DETERMINED ON SHIP TO INSURE A
EAD OF LINE FROM WINCH DRUM TO UNIVERSAL ROLLER CHOCKS.
LLATION TO BE APPROVED BY OWNER'S INSPECTOR PRIOR TO
WELDING.
IOR SURFACES OF DECK FITTINGS, FOUNDATIONS AND DECKS TO
REPARED AND COATED IN ACCORDANCE WITH REFERENCE Nº 5.
FICATIONS FOR STEEL CASTINGS (RELATIVE TO ROLLER FAIRLEADS
3) TO BE IN ACCORDANCE WITH ASTM A27-55, GRADE 60-30
FICATES NOT REQUIRED; INSPECTION AND TESTING TO ABS AND USCG.)
$\triangle 1^{2}$ 9 ER DESIGNATION OF WINCHES INDICATED BY NUMERALS IN SQUARE
ADJACENT TO WINCHES.

$\triangle 4^{2}$ "GENERAL NOTES CONTINUED"
10. FOR FOAM IN BASE OF MOORING FITTINGS, SEE GENERAL NOTE Nº 19A ON REFERENCE Nº 5.

• RESERVATIONS •

$\triangle 2^{9}$ ~~1. THE CLOSED (C.B./22" I.D.) STEM, ℄ MOORING CHOCK (SHOWN IN DET. "4-A") IS RESERVED.~~
$\triangle 4^{1}$ ~~2. INFORMATION FOR FOAM IN BASE OF MOORING FITTINGS TO BE ADDED LATER.~~

3

2

ALTERATIONS

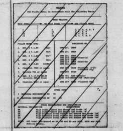
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.	
3	5/17/78	14/15 16	FOUR 90° ELBOWS TO TWO 180° RETURN BENDS.	JTS	USPH 6/14/78 USCG 9/18/78	ABS 8-17-78
		15	2. IN B/M CHANGED QUANTITY AND TYPE OF ITEM 60 FROM FOUR 90° ELBOWS TO TWO 180° RETURN BENDS TO SUIT ABOVE ITEM 1.			
		15	3. IN B/M DECREASED QUANTITY OF ITEM 68 FROM 4 TO 2 TO SUIT ABOVE ITEM 2. ABOVE PER DEVELOPMENT.	LT	5/18/78	
4	7/10/78	2	1. DELETED RESERVATION Nº 2.	JTS		
		2	2. ADDED GEN. NOTE # 10.			
		14/15 16	3. IN SECT. "14-A", VIEW "15-A", DET. "14-B" & SECTS. "15-B", "16-C" & "16-D", CHANGED MAKE-UP OF ℄ CLOSED BOW CHOCK FROM TWO 180° RETURN BENDS TO FOUR 90° ELBOWS.		ABS 9-15-78	
		15	4. IN B/M CHANGED QUANTITY AND TYPE OF ITEM 60 FROM TWO 180° RETURN BENDS TO FOUR 90° ELBOWS TO SUIT ABOVE ITEM 3.			
		15	5. IN B/M INCREASED QUANTITY OF ITEM 68 FROM 2 TO 4 TO SUIT ABOVE ITEM 4. ABOVE PER DEVELOPMENT.	LT	7/10/78	USPH 8-10-78
5.	9/11/78	14,15	1. REVISED SECT "14-A", ELEV "15-A" & SECT "15-B".	J. A. L.		USCG 1-8-79 USPH 10-18-78 ABS 12-7-78
		14	2. ADDED DET "14-B"			
		14	3. ADDED ITEMS 74, 75 & 76 IN B/M. ABOVE ITEMS PER COMMENT G.G. SHARP LETTER 5587/512 DATE 8-14-78: & TELECON DATED 6 SEPT 1978	LT	10/14/78	
6	12/11/78	14	1. CHANGED DET "14-B" TO READ "14-C."			
		5	2. IN DETAIL "5-B" RELOCATED MOORING LINE ROLLER FAIRLEADS FROM 31'-0" TO 27'-0" OFF ℄, P & S 18" FWD OF FR 45. ABV ITEM 1 PER COMMENT IN G.G. SHARP LETTER 5587/512/517 DATED OCT-27-78 ABV ITEM 2 PER YIS H-4650-21-802 DATED NOV-30-78	J. A. L.	LT 12/13/78	USPH 1-8-79 ABS. 2-21-79
7.	2/8/79	5,13	1. IN DETAILS "5-B" & "13-B" RELOCATED MOORING LINE ROLLER FAIRLEADS FROM 27'-0" TO 28'-0" OFF ℄, P & S. & FROM 18" TO 3'-6" FWD OF FR. 45.	J. A. L.		USPH 3-13-79 A.B.S. 5-3-79 USCG 5-29-79
		13	2. RELOCATED SLACK MOORING LINE ROLLERS AS SHOWN IN DETS "13-C" & "13-D" ABV ITEMS PER YIS H4650-21-864 DATED 1/23/79		2/16/79	
8	11/6/79	5	1. IN DETAIL "5-A" ON ALL 16" DOUBLE MOORING BITTS ADDED SIX COUNTERSUNK PIPE PLUGS.	G.H.		USPH 1-31-80 ABS 12-18-79 USCG 12-31-79
		15	2. IN B/M ADDED ITEM Nº 77. ABV. PER Y.I.S. # H-4650-21-1073 DTD. 10-22-79	LT	11/9/79	

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	11/29/77	5	1. IN DET. "4-A" INDICATED MOORING WINCH CONTROLS ON FOCSLE DK. AT BULWARK, AFT OF FR. 39 P/S.	JTS	ABS 3-10-78 U.S.P.H. 1-3-78
		3, 4, 5.	2. ADDED GEN. NOTE # 9 AND INDICATED NUMBERING OF MOORING WINCHES IN DET. "5-B". ITEM # 1 PER G.G.S. LTR. DATED 9/8/77 FILE Nº 5587/S12. ITEM # 2 PER DEVELOPMENT.	4	12/1/77
2	3/16/77	4	1. IN DET. "4-A" INDICATED FWD. K.P. P/S & BOW LOOKOUT PLATFORM.		
		4	2. IN DET. "5-B" INDICATED STEP @ DOOR APPROX. FR. $44\frac{1}{2}$ P/S; ADDED DETS. "4-B" & "4-C" SHOWING DET. OF RELATED STEP.	JTS	
		3	3. ADDED ITEMS Nº 56 & 57 TO B/M FOR MAT'L. OF ABV. STEP DETAILS.		GGS 4/24/78 5587/512
		5	4. IN DET. "5-B" ADDED SLACK MOORING LINE ROLLERS FWD OF FOCSLE END BHD. @ FR. 45.		USCG 5/5/78
		13	5. ADDED DET. "13-C" & "13-D" RELATING TO FDN. FOR SLACK MOORING LINE ROLLERS.		U.S.P.H 5/25/78
		13	6. ADDED B/M ITEMS 58 & 59 IN ADDITIONAL B/M IN PANEL # 15 TO SUIT DETS. "13-C" & "13-D".		ABS 4/4/78
		1	7. ADDED REF. DWG. Nº 8. ABV. ITEMS 2, 3 & 7 PER DEVELOPMENT.		
		"	ABV. ITEMS 1, 4, 5 & 6 PER G.G.S LTR DATED 1/23/78 FILE # 5587/S12.		
		1	8. ADDED REF. DWGS. Nº 9 & 10.		
		2	9. DELETED RESERVATION Nº 1 RELATING TO ℄ STEM MOORING CHOCK.		
		4	10. IN DET. "4-A" INDICATED ℄ STEM MOORING CHOCK TOGETHER WITH ITS RELATED FABRICATION DETS.		
		14, 15 16, 17	11. ADDED DETS. 14-A/14-B/15-A/15-B/15-C/16-A/16-B/16-C/16-D/17-A/17-B & 17-C DETAILING ℄ STEM CLOSED MOORING CHOCK AT BOW ON FOCSLE DK.		
		15	12. IN B/M ADDED ITEM Nº 60 TO 73 INCLUSIVE, RELATIVE TO ABOVE ITEM Nº 11.		
		10	13. IN DET. "10-G" INDICATED HOLD DIM. OF 6" FROM MAIN DK. TO 30.63# BASE PL. OF CHOCK HOUSING AT STEM SHELL PLG. ON ℄. ABOVE PER DEVELOPMENT.		3/24/78
3		14/15 16	1. IN SECT. "14-A", VIEW "15-A", DET. "14-B" AND SECTIONS "15-B", "16-C" & "16-D", CHANGED MAKE-UP OF ℄, CLOSED, BOW CHOCK FROM (CONTINUED IN NEXT COLUMN)	JTS	

4651		4650
4650		4650
HULL	DESIGN	CHARGE

JOB NO. 222



UNIT Nº 9600	
MRK.	DATE
9, 10, 11, 12, 12-1, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 23-1, 24, 25, 25-1, 26, 27, 28, 28-1, 29, 31, 36, 38, 38-1, 39, 40, 41, 42, 43, 53, 53-1	4-11-78
	7-18-78

UAO - 5049 - A

NO.	PLAN NO.	TITLE
10	129-02-29	FOCSLE DK. PLG & GIRDERS FR. 45 FWD.
9	129-03-30	FOREPEAK FRAMING FRS. 4 TO 9½.
8	212-00-08	BLOCK LIST.
7	129-10-09	FDNS. FOR MOORING WINCHES FWD.
6	129-05-01	SHELL EXPANSION FR. 77 FWD.
5	H4650-161-00-01	PAINTING SCHEDULE.
4	455/14	DUNSTOS UNIVERSAL FAIRLEAD.
3	STD. 222-00-5	10", 15", 22" & 24" DIA. ROLLER FAIRLEADS.
2	STD. 222-00-4	12", 14", 16", 18" & 24" MOORING BITTS.
1	STD. 222-00-1	14" x 24" CLOSED PANAMA MOORING CHOCKS.

$\triangle 2^{8}$ $\triangle 2^{7}$

REFERENCE PLANS

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN
DATE 8 AUGUST 1977
DRAWN J. T. SOLLERS
IN CHARGE L. THADEN
CHECKED L.H.T.
EXAMINED
REVIEWED W.A.WOOD 7/20/77
APPROVED

PLAN NO. H-4650-222-00-01
ALT. NO. 8^{2}

MOORING ARRG'T. & DETAILS FWD OF FR. 157

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	9-8-77				
A.B.S.	10-4-77				
U.S.C.G.	10-11-77				
LLOYD'S R.S.	╳				
U.S.P.H.S.	8-25-77	1-5-78			
PANAMA CANAL	11-24-78				

KEY PLAN

1

H-471

Sch 1st Sub. 3-7-77

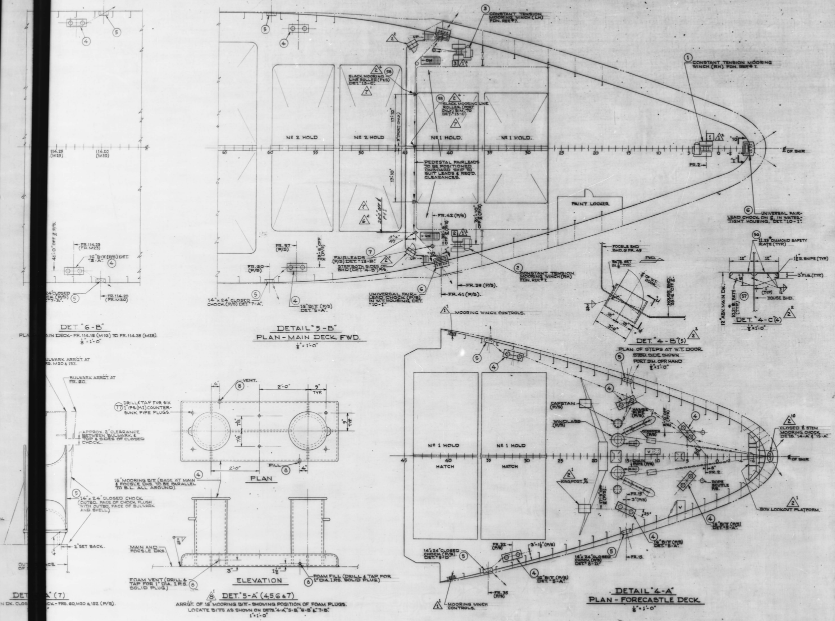
	DATE OF ISSUE
ALTERATION	— — 1² 2² 3² 4² 5² 6² 7² 8²
ENGINEERING DISTRIBUTION	[illegible]
OWNERS	4 2 4 2 2 4 2 2 2
AMERICAN BUREAU	3 3 3 3 3 3 3 3 3
LLOYD'S R.S.	
U.S.M.A.	2 1 2 1 1 2 1 1 1
U.S NAVY	
U.S.C.G.	2 2 2 2 2 2 2 2 2
JOINER CONT'R.	
USPH	3 3 3 3 3 3 3 3 3
OWNER'S INSP.	1 1 1 1 1 1
AM. BU. INSP.	1P 1 1 1 1 1 1
LLOYD'S INSP.	
U.S.M.A. INSP.	1 1 1 1 1 1
U.S. NAVY INSP.	
U.S.C.G. INSP.	1P 1 1 1 1 1 1 1
C D SCHAUB	1 1 1 1 1 1 1
HULL DRAFT. - 21	1P 1P 1 1 1 1 1 1 1
MACH. DRAFT. - 22	2P 2P 2 2 2 2 2 2 2
ELEC. DRAFT. - 23	1P 1P 1 1 1 1 1 1 1
OUTFIT. DRAFT. - 25	
ESTIMATING	
21-1D WAWOOD	1P 1P 1 1 1 1 1 1 1
PRODUCTION (BCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	16 5 18 7 16 8 13 7 13 8 16 8 19 19 19
YARD DISTRIBUTION	[illegible]
UAO-OFFICE	1 1 1 1 1 1 1 1
P McNAIR	1P 1P 1 1 1 1 1 1
PIECE RATE - 11	1P 1P 1 1 1 1 1 1 1
TEST DEPARTMENT	1 1
SHIP SUPT	1 1 1 1 1 1 1
PLANNING	1P 1P 1 1 1 1 1 1 1
GROUND ASSEMBLY	4 4 4 4 4 4 4
35 DEPT.	2 2 2 2 2 2 2
H. LEVY	1 1 1 1 1 1 —
QUALITY ASSURANCE	1 1 1 1 1 1 —
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	2 2 2 2 2 2 2
OPTICAL DETAIL - 45	2P 1 2P 2 2 2 2 2 2 2
WET DOCK	
PIPE SHOP - 52	
OUTFIT. #1 PIER	1 1 1 1 1 1 1
PIPE DRAFT. - 52	2 2 2 2 2 2 2
BOILER SHOP - 58	1 1 1 1 1 1 1
OUTSIDE MACH. - 60	2 2 4 4 4 4 4
C-MAT'L	1 1 1 1 1 1 1
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 51	
PAINT SHOP - 75	1 1 1 1 1 1 1
WELDING	
RIGGING DEPT	2 2 2 2 2 2 2
MOLD LOFT - 41	1 1 1 1 1 1 1
BRACKET SHOP	
BRAKUS	1 1
B. MILLER	1 1
[illegible]	1 1
TOTAL YARD DIST.	2 4 1 5 / 29 28 30 30 30 31 30

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-222-00-01

FRAME 1 OF 7


4
5
41'-0" OFF ℄ P/S.
114.25 (M25)
114.20 (M20)
℄
FR. 114.23 (FR. M23)
16" BITT (P/S) DET. "5-A". 4
24" CLOSED CK (P/S) "7-A". 5
FR. 114.20 (FR. M20)
3
CONSTANT TENSION MOORING WINCH (LH) FDN. REF. #7.
UP
DN
2
58 SLACK MOORING LINE ROLLER (P&S) DET. "13-C".
7
58 SLACK MOORING LINE ROLLER (PORT ONLY) SIM. TO DET. "13-C".
Nº 2 HOLD
Nº 2 HOLD
Nº 1 HOLD.
Nº 1 HOLD.
17'-10"
9" (PORT ONLY)
17'-10"
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-2
PEDESTAL FAIRLEADS TO BE POSITIONED ONBOARD SHIP TO SUIT LEADS & REQ'D. CLEARANCES.
6
26'-0" OFF ℄ P&S
FR. 42 (P/S)
31'-10" OFF ℄ (P/S)
32'-6" OFF ℄ (P/S)
3'-6" P/S
10
1"
FR. 57 (P/S)
39'-6" OFF ℄ (P/S)
FR. 60 (P/S)
7 FAIRLEADS (P/S) DET. "13-B".
STEP BOTH SIDES OF BHD (DET. "4-B") P/S.
2 CONSTANT TENSION MOORING WINCH (RH) FDN. REF. #7.
FR. 39 (P/S).
FR. 41 (P/S).
6 UNIVERSAL FAIRLEAD CHOCK (P/S) IN W.T. HOUSING, DET. "10-1".
5 14"x24" CLOSED CHOCK (P/S) DET. "7-A".
4 16" BITT (P/S) DET. "5-A".
PAINT LOCKER.
1 CONSTANT TENSION MOORING WINCH (RH) FDN. REF. # 7.
1
"10"
"1"
FR. 2
℄ OF SHIP
6 UNIVERSAL FAIRLEAD CHOCK ON ℄, IN WATERTIGHT HOUSING, DET. "10-1".
FOCSLE END BHD. @ FR. 45
BKTS. SET IN 1/2" TYP.
FWD.
℄ OF W.T. DOOR.
HOUSE BHD. 35'-6" OFF ℄.
3/16
18"
18"
3'-0"
1/4
56 11.25# DIAMOND SAFETY PLATE (TYP.)
12"
12"
1 1/2" R. SNIPE (TYP.)
3" FLG. (TYP.)
6"
1" (TYP.)
3/16
57 10.21# PL. BKTS (TYP.)
HOUSE BHD.
12" ABV. MAIN DK.
MOORING WINCH CONTROLS.
CAPSTAN (P/S)
WINDLASS (P/S)
HAWSE PIPE (P/S)
STOPPER (P/S)
8'-0" OFF ℄ (P/S)
5'-0"
CHAIN PIPE (P/S)
8"
FR. 2.
KINGPOST P/S
17'-9" OFF ℄ (P/S)
FR. 15
3" (P/S)
25°
ROPE SCUTTLE P/S.
CLOSED ℄ STEM MOORING CHOCK DETS. "14-A" & "15-A".
BOW LOOKOUT PLATFORM.
Nº 1 HOLD
Nº 1 HOLD
HATCH
HATCH
14"x24" CLOSED CHOCK (P/S). DET. "9-D"
FR. 32 (P/S)
3'-1 1/2" (P/S)
16" BITT (P/S) DET. "5-A".
14"x24" CLOSED CHOCK (P/S) DET. "8-D".
FR. 15.
16" BITT (P/S) DET. "5-A".
16" BITT (P/S) DET. "5-A".
FR. 35 (P/S)
MOORING WINCH CONTROLS.
ULWARK ARRG'T. AT RS. M20 & 152.
BULWARK ARRG'T. AT FR. 60.
APPROX. 2" CLEARANCE BETWEEN BULWARK & TOP & SIDES OF CLOSED CHOCK.
5 14"x24" CLOSED CHOCK (OUTBD. FACE OF CHOCK FLUSH WITH OUTBD. FACE OF BULWARK AND SHELL.)
4"
2" SET BACK.
OUT ACE OF
8 VENT.
4"
2'-0"
9" TYP.
77 DRILL & TAP FOR SIX 1" I.P.S. (M.I.) COUNTERSUNK PIPE PLUGS.
7 1/2"
7 1/2"
9" TYP.
2'-0"
FILL 8
4"
PLAN
4 16" MOORING BITT (BASE AT MAIN & FOCSLE DKS. TO BE PARALLEL TO B.L. ALL AROUND).
11/16
MAIN AND FOCSLE DKS.
3"
1 1/2"
FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.) 8
FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.) 8
ELEVATION

DET. "6-B"
PLA AIN DECK - FR. 114.16 (M16) TO FR. 114.28 (M28).
1/8" = 1'-0"

DETAIL "5-B"
PLAN - MAIN DECK FWD.
1/8" = 1'-0"

DET. "4-B" (5) △2
PLAN OF STEPS AT W.T. DOOR
STBD. SIDE SHOWN
PORT SIM. OPP. HAND
1/2" = 1'-0"

DET. "4-C" (4) △2
1/2" = 1'-0"

DET A" (7)
AIN DK. CLOS CK - FRS. 60, M20 & 152 (P/S).

△8 DET. "5-A" (4, 5, 6 & 7)
ARRG'T. OF 16" MOORING BITT - SHOWING POSITION OF FOAM PLUGS.
LOCATE BITTS AS SHOWN ON DETS. "4-A", "5-B", "6-B" & "7-B".
1" = 1'-0"

DETAIL "4-A"
PLAN - FORECASTLE DECK
1/8" = 1'-0"

REV.	ITEM Nº	Nº REQ'D	DESCRIPTION
	1	1	CONSTANT TENSION MOORING WINCH.
	2	1	↓
	3	1	↓
	4	12	16" DOUBLE MOORING BITT.
	5	10	14" x 24" CLOSED MOORING CHOCK.
	6	3	UNIVERSAL ROLLER FAIRLEAD. (SHORT BASE)
	7	4	15" DIA. ROLLER FAIRLEAD.
	8	50	1" DIA. I.P.S. SOLID PLUG.
	9	6	3'-5" x 16" x 30.63# PL. EA. (CHOCK BASE PL.)
	10	6	3'-3" x 6" x 30.63# PL. EA. (OUTBD PL.)
	11	6	3'-3" x 6" x 30.63# PL. EA. (INBD. PL.)
	12	12	9" x 16" x 30.63# PL. EA. (END PLs.)
	13	6	12" x 3" x 30.63# PL. EA. (STIFF.)
	14	1	1 1/4" x 3/16" F.B. (BACKING BAR.)
	15	2	2'-0" x 18" x 20.42# PL. (TOP BRKT).
	16	2	20" x 3'-6" x 25.53# PL. (INBD. SKIRT).
	17	4	20" x 18" x 25.53# PL. (END SKIRT).
	18	2	18" x 3'-6" x 25.53# PL. (INBD. SKIRT).
	19	4	18" x 18" x 25.53# PL. (END SKIRT).
	20	4	4" x 8" x 20.42# PL. (CONN. BRKT).
	21	1	4'-8" x 4'-8" x 30.63# PL. (FACE PL. BOW)
	22	2	4'-8" x 5'-4" x 30.63# PL. (FACE PL. FR. 41)
	23	3	4'-8" x 2'-0" x 30.63# PL. (TOP PL.)
	24	2	2'-0" x 4'-8" x 30.63# PL. (SIDE PLs. BOW).
	25	4	2'-0" x 5'-4" x 30.63# PL. (SIDE PLs. FR. 41)
	26	2	2'-0" x 2'-0" x 40.84# PL. (BRKTS. BOW).
	27	4	2'-0" x 2'-8" x 40.84# PL. (BRKTS. FR. 41).
	28	3	4'-8" x 2'-0" x 30.63# PL. (BASE PLs.).
	29	6	11" x 24 1/2" x 20.42# PL. (SIDE ACCESS PLs).
	30	6	11" x 24 1/2" x 1/4" THK. GASKET. (SIDE ACC. PLs).
	31	6	12" x 12" x 20.42# PL. (TOP ACCESS PLs).
	32	6	12" x 12" x 1/4" THK. GASKET. (TOP ACCESS PLs).
	33	288	3/8" DIA. FLAT HD. MACH. SCREWS (1 1/4" LG. EA.)
	34	1	3" HALF-ROUND BAR. (54 LINEAR FT.).
	35	1	3/4" DIA. ROUND BAR. (8 LINEAR FT.).
	36	3	2'-8" x 4'-2" x 20.42# PL. (COVER).
	37	1	2" WIDE x 1" THK. GASKET (45 LINEAR FT.).
	38	1	1 1/4" x 1/4" FB. RETAINERS (135 LINEAR FT.).
	39	15	4" x 5 1/2" x 30.63# PL. (SPACER).
	40	15	3 1/2" x 7" x 30.63# PL. (DOGS).
	41	30	3 1/4" x 2 3/4" x 30.63# PL. (BOLT PAD).
	42	1	1" DIA. RD. BAR (BOLT SHANK).
	43	15	3" x 3" x 40.84# PL. (BOLT BOSS).
	44	1	1 1/2" DIA. ROUND BAR (DOG PIN).
	45	15	3/16" DIA. COTTER PIN.
	46	1	2 1/2" DIA. ROUND BAR (HINGE PIN).
	47	6	1/4" DIA. COTTER PIN.
	48	15	WASHER FOR 1" DIA. BOLT.
	49	15	HEAVY HEX. NUT FOR 1" DIA. BOLT.
	50	12	8" x 6" x 30.63# PL. (HINGE PAD).
	51	6	7" x 14" x 30.63# PL. (HINGE BLADE).
	52	1	4" x 3/4" FB. (VERT. STIFF).
	53	1	4" x 3/4" FB. (HORIZ. STIFF).
	54	4	5'-0" x 11'-0" x 30.63# PL. (FAIRLEAD FDN).
	55	4	2'-0" x 2'-0" x 30.63# PL. (FAIRLEAD BASE).
2^3	56	4	3'-2" x 18" x 11.25# PL. EA. (DIAMOND SAFETY PL.)
2^3	57	8	14" x 8" x 10.21# PL. EA.

• GENERAL NOTES •

1. ALL WELDING TO BE IN ACCORDANCE WITH ABS RULES.
2. ALL STRUCTURAL MATERIAL TO BE MILD STEEL (MA) CONFO ABS GRADE "A", EXCEPT AS NOTED.
3. ALL SNIPES TO BE 1 1/2" RADIUS, UNLESS OTHERWISE NOTED.
4. LOCATIONS OF ALL BITTS ONBOARD SHIP TO BE APPROVED B INSPECTOR PRIOR TO FINAL WELDING.
5. BASES OF BITTS TO FOLLOW SHEER AND SHALL BE LEVEL A
6. EXACT LOCATION, HEIGHT AND INCLINATION OF ROLLER FAI WITH CONICAL BASES, SHALL BE DETERMINED ON SHIP TO FAIRLEAD OF LINE FROM WINCH DRUM TO UNIVERSAL ROL INSTALLATION TO BE APPROVED BY OWNER'S INSPECTOR FINAL WELDING.
7. INTERIOR SURFACES OF DECK FITTINGS, FOUNDATIONS A BE PREPARED AND COATED IN ACCORDANCE WITH REFE
8. SPECIFICATIONS FOR STEEL CASTINGS (RELATIVE TO ROLL REF. Nº 3) TO BE IN ACCORDANCE WITH ASTM A27-55, GRA (CERTIFICATES NOT REQUIRED; INSPECTION AND TESTING T
9. △1² NUMBER DESIGNATION OF WINCHES INDICATED BY NUMERA BOXES ADJACENT TO WINCHES.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

BUILDERS PLAN NO. H-4650-222-00-01

FRAME 2 OF 7

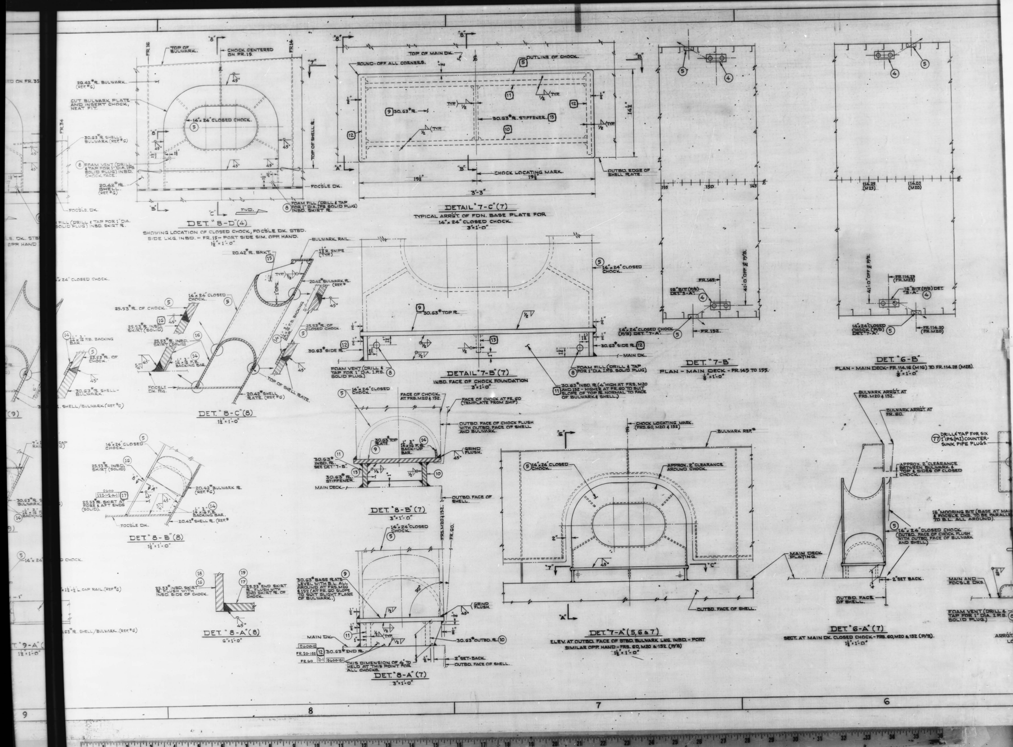
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-222-00-01

Sep 1980

8X

FRAME 3 OF 7



DET. "8-D"(4)
SHOWING LOCATION OF CLOSED CHOCK, FOC'SLE DK. STBD. SIDE LKG. INBD. - FR. 15 - PORT SIDE SIM. OPP. HAND.
1½"=1'-0"

DETAIL "7-C"(7)
TYPICAL ARRG'T. OF FDN. BASE PLATE FOR 14"x24" CLOSED CHOCK.
3"=1'-0"

DET. "7-B"
PLAN - MAIN DECK - FR. 145 TO 155.
⅛"=1'-0"

DET. "6-B"
PLAN - MAIN DECK - FR. 114.16 (M16) TO FR. 114.28 (M28).
⅛"=1'-0"

DET. "8-C"(8)
1½"=1'-0"

DETAIL "7-B"(7)
INBD. FACE OF CHOCK FOUNDATION
3"=1'-0"

DET. "8-B"(7)
3"=1'-0"

DET. "8-B"(8)
1½"=1'-0"

DET. "8-A"(8)
6"=1'-0"

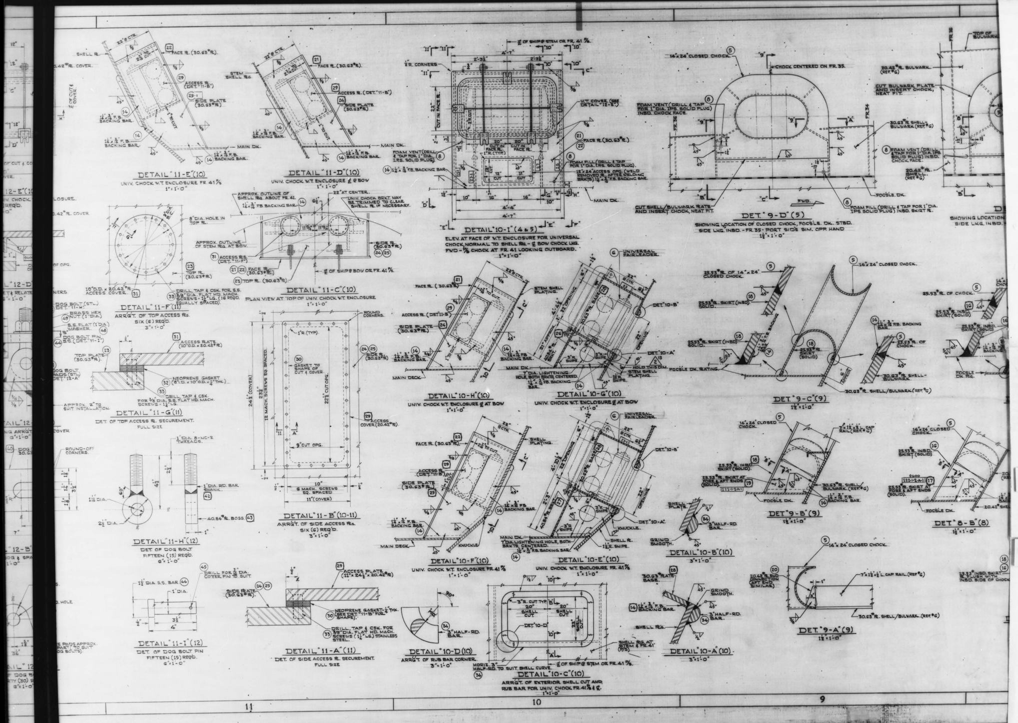
DET. "8-A"(7)
3"=1'-0"

DET. "7-A"(5, 6 & 7)
ELEV. AT OUTBD. FACE OF STBD. BULWARK LKG. INBD. - PORT SIMILAR OPP. HAND - FRS. 60, M20 & 152 (P/S)
1½"=1'-0"

DET. "6-A"(7)
SECT. AT MAIN DK. CLOSED CHOCK - FRS. 60, M20 & 152 (P/S).
1½"=1'-0"

DET. "9-A"(
1½"=1'-0"

TOP OF BULWARK.
CHOCK CENTERED ON FR. 15
FR. 16
FR. 14
20.42# R. BULWARK. (REF. #G)
CUT BULWARK PLATE AND INSERT CHOCK, NEAT FIT.
14"x24" CLOSED CHOCK.
30.63# R. SHELL-BULWARK (REF #G)
FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG) INBD. CHOCK FACE.
20.42# R. SHELL. (REF #G)
FOC'SLE DK.
TOP OF SHELL R.
FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG) INBD. SKIRT R.
FWD.
TOP OF MAIN DK.
ROUND-OFF ALL CORNERS.
OUTLINE OF CHOCK.
30.63# R.
30.63# R. STIFFENER.
CHOCK LOCATING MARK.
OUTBD. EDGE OF SHELL PLATE.
3'-3"
19½"
14½"
TYP.
BULWARK RAIL.
20.42# R. BRKT.
1½" R. SNIPE (TYP.)
20.42# BULWARK R. (REF #)
14"x24" CLOSED CHOCK.
25.53# R. OF CHOCK.
25.53# R. INBD. SKIRT (SOLID)
1"x3" F.B. BACKING BAR.
1½"x½" F.B. BACKING BAR.
25.53# R. OF CLOSED CHOCK.
FOC'SLE DK. R.
20.42# SHELL PLATE. (REF #G)
TOP OF SHELL PLATE.
30.63# R. SHELL-BULWARK.
30.63# TOP R.
30.63# SIDE R.
FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.)
FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG)
MAIN DK.
30.63# INBD. R. (4" HIGH AT FRS. M20 AND 152 - HIGHER AT FR. 60 TO SUIT SLOPE OF TOP R. NORMAL TO FACE OF BULWARK & SHELL)
FR. 149
FR. 152
16" BITT (P/S) DET. "5-A"
41'-0" OFF ℄ P/S
14"x24" CLOSED CHOCK (P/S) DET. "7-A"
155
150
145
℄
114.25 (M25)
114.20 (M20)
FR. 114.23 (M23)
FR. 114.20 (FR. M20)
16" BITT (P/S) DET. "5-A"
14"x24" CLOSED CHOCK (P/S) DET. "7-A"
FACE OF CHOCK AT FRS. M20 & 152.
FACE OF CHOCK AT FR. 60 (TEMPLATE FROM SHIP)
OUTBD. FACE OF CHOCK FLUSH WITH OUTBD. FACE OF SHELL AND BULWARK.
30.63# TOP PLATE.
1"x3" 1½"x½" F.B. BACK-UP BAR.
GRIND FLUSH.
30.63# INBD. R. SEE DET. "7-B".
30.63# R. STIFFENER.
MAIN DECK.
OUTBD. FACE OF SHELL.
FR. M20 & 152.
FR. 60.
30.63# BASE PLATE LEVEL WITH B.L. ALL AROUND AT FRS. M20 & 152 (AT FR. 60 SLOPE TO SUIT SLIGHT FLARE OF BULWARK.)
30.63# END R.
30.63# OUTBD. R.
2" SET-BACK.
THIS DIMENSION OF 4" TO HELD AT THIS POINT FOR ALL CHOCKS.
FR. 20-152
FR. 60
25.53# INBD. SKIRT R. FLUSH WITH INBD. SIDE OF CHOCK.
25.53# END SKIRT R. FLUSH WITH END SKIRT R. OF CHOCK.
25.53# R. SKIRT AT FORE & AFT ENDS (SOLID).
20.42# BULWARK R. (REF #G)
20.42# SHELL R. (REF #G)
CHOCK LOCATING MARK. (FRS. 60, M20 & 152)
BULWARK REF #
APPROX. 2" CLEARANCE AROUND CHOCK.
OUTBD. FACE OF SHELL.
BULWARK ARRG'T. AT FRS. M20 & 152.
BULWARK ARRG'T. AT FR. 60.
APPROX. 2" CLEARANCE BETWEEN BULWARK & TOP & SIDES OF CLOSED CHOCK.
14"x24" CLOSED CHOCK. OUTBD. FACE OF CHOCK FLUSH WITH OUTBD. FACE OF BULWARK AND SHELL.
MAIN DECK PLATING.
2" SET BACK.
OUTBD. FACE OF SHELL.
DRILL & TAP FOR SIX 1" I.P.S. (M.I.) COUNTER-SUNK PIPE PLUGS.
16" MOORING BITT (BASE AT MAIN & FOC'SLE DKS. TO BE PARALLEL TO B.L. ALL AROUND).
MAIN AND FOC'SLE DKS.
FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.)
ARRG'T.
14"x24" CLOSED CHOCK.
1½"x1½" L. CAP RAIL. (REF #G)
.63# R. SHELL/BULWARK. (REF #G)
9
8
7
6


DETAIL "11-E"(10)
UNIV. CHOCK W.T. ENCLOSURE FR. 41 5/8
1"=1'-0"
DETAIL "11-D"(10)
UNIV. CHOCK W.T. ENCLOSURE ℄ @ BOW
1"=1'-0"
DETAIL "10-I"(4 & 5)
ELEV. AT FACE OF W.T. ENCLOSURE FOR UNIVERSAL CHOCK, NORMAL TO SHELL PL. - ℄ BOW CHOCK LKG. FWD - 5/8 CHOCK AT FR. 41 LOOKING OUTBOARD.
1"=1'-0"
DET. "9-D"(5)
SHOWING LOCATION OF CLOSED CHOCK, FOCSLE. DK. STBD. SIDE LKG. INBD. - FR. 35 - PORT SIDE SIM. OPP. HAND
1 1/2"=1'-0"
DETAIL "11-F"(11)
ARRGT. OF TOP ACCESS PLS.
SIX (6) REQD.
3"=1'-0"
DETAIL "11-C"(10)
PLAN VIEW AT TOP OF UNIV. CHOCK W.T. ENCLOSURE
1"=1'-0"
DETAIL "11-G"(11)
DET. OF TOP ACCESS PL. SECUREMENT.
FULL SIZE
DETAIL "10-H"(10)
UNIV. CHOCK W.T. ENCLOSURE ℄ AT BOW
1"=1'-0"
DETAIL "10-G"(10)
UNIV. CHOCK W.T. ENCLOSURE ℄ AT BOW
1"=1'-0"
DET. "9-C"(9)
1 1/2"=1'-0"
DETAIL "11-B"(10-11)
ARRGT. OF SIDE ACCESS PLS.
SIX (6) REQ'D.
3"=1'-0"
DETAIL "11-H"(12)
DET. OF DOG BOLT
FIFTEEN (15) REQD.
6"=1'-0"
DETAIL "10-F"(10)
UNIV. CHOCK W.T. ENCLOSURE FR. 41 5/8
1"=1'-0"
DETAIL "10-E"(10)
UNIV. CHOCK W.T. ENCLOSURE FR. 41 5/8
1"=1'-0"
DETAIL "10-B"(10)
3"=1'-0"
DET. "9-B"(9)
1 1/2"=1'-0"
DET. "8-B"(8)
1 1/2"=1'-0"
DETAIL "11-I"(12)
DET. OF DOG BOLT PIN
FIFTEEN (15) REQD.
6"=1'-0"
DETAIL "11-A"(11)
DET. OF SIDE ACCESS PL. SECUREMENT.
FULL SIZE
DETAIL "10-D"(10)
ARRGT. OF RUB BAR CORNER.
3"=1'-0"
DETAIL "10-C"(10)
ARRGT. OF EXTERIOR SHELL CUT AND RUB BAR FOR UNIV. CHOCK FR. 41 5/8 & ℄.
1"=1'-0"
DETAIL "10-A"(10)
3"=1'-0"
DET. "9-A"(9)
1 1/2"=1'-0"
14"x24" CLOSED CHOCK.
CHOCK CENTERED ON FR. 35.
FOAM VENT (DRILL & TAP FOR 1" DIA. IPS SOLID PLUG) INBD. CHOCK FACE.
FOAM FILL (DRILL & TAP FOR 1" DIA. IPS SOLID PLUG) INBD. SKIRT PL.
CUT SHELL/BULWARK PLATE AND INSERT CHOCK, NEAT FIT.
30.63# PL. SHELL/BULWARK (REF. #G)
FOCSLE. DK.
MAIN DK.
MAIN DECK
UNIVERSAL FAIRLEADER
STEM SHELL PLATING.
FACE PL. (30.63# PL.)
ACCESS PL. (DET. "11-B")
SIDE PLATE (30.63# PL.)
1 1/2"x3/8" F.B. BACKING BAR.
3"HALF-RD. BAR.
GRIND SMOOTH.
NEOPRENE GASKET
DRILL, TAP & CSK. FOR 3/8" DIA. FLAT HD. MACH. SCREWS (1 1/4" LG.) STAINLESS STEEL.
11
10
9

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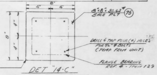
BUILDERS PLAN NO. H-4650-222-00-01

FRAME 4 OF 7

L OF M RIAL (PER SHIP)

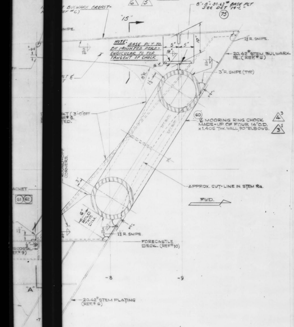
RIAL	MAT'L. SPECS	ERN	REMARKS	DET. No.	REQN. No.
EL	ABS Gr."A"		CUT TO SUIT DET. "13-D" INSTALLATION.	13-D	UAO
	↓		CUT TO SUIT DET. "13-C" INSTALLATION.	13-C	↓
ED EL	ASTM A-234		SCH. 160 (LONG RADIUS = 21") SIM. TO BABCOX & WILCOX	14-A 15-A	504102
EL	ABS GR."A"		CUT TO SUIT INSTALLATION.	14-A	UAO
			↓ ↓ ↓	14-A 15-A	
				15-A	
				14-A	
	↓		↓ ↓ ↓	15-C	
	CARBON S UNTREAT		10 THDS. PER INCH (BETH. FASTENER CAT. 436 Pg. 137)	16-C	↓
ASS	COMM		McMASTER-CARR CAT. 82 Pg. 1419A FIG. 92771D038	16-C	504130-A
RBON EL	COMM		SIM. TO TUBE-TURN CAT. No. 311 PG. 78 (DBL. EXTRA STRONG - PART No. 98-G.)	16-D	504111 504111-A
	ABS GR."A"		CUT TO SUIT DETS. "16-A" & "17-B".	16-A 17-B	UAO
			↓ ↓ ↓ ↓ ↓	↓	
	↓		CUT & SHAPE TO SUIT DET. "17-C".	17-C	↓
LESS EL	TYPE 416		13 THDS. PER INCH	17-B	504130-A
	↓		1/2" DIA. x 13 THDS. PER INCH.	↓	
EL	ABS GR"A"		20.42# PLT 4"x8" - CUT TO SUIT	15-A	
EL	ABS GR"A"		30.63# PLT - 8"x8"	14-B	
EL	ABS GR"A"		3"x3/4" FB - 2'-9" LG	15-A	
RON	COMM		FIG. 2075M (FLAGG FITTING CAT. I-64 Pg. 49)	5-A	504103


8"
4"
4"
8"x8"x30.63# BASE PLT
75
DRILL & TAP FOUR (4) HOLES FOR 1/2" ∅ BOLTS (TEMP FROM UNIT)
FLANGE BEARING REF. 4 - ITEM 129
ROUND ALL CORNERS 1/8" RAD.

DET "14-C"

BASE PLATE FOR FLG BEARING

6 5 3"=1'-0"

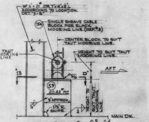

BULWARK BREAST-
"15"
8"x8"x30.63# BASE PLT SEE DET "14-C"
75
NOTE: BASE PLT TO BE MOUNTED PERPENDICULAR TO TOP TANGENT OF CHOCK
5"
5"
10"
1 1/2" R. SNIPE.
20.42# STEM BULWARK PL. (REF #6)
3" R. SNIPE (TYP)
60
℄ MOORING RING CHOCK MADE-UP OF FOUR 14" O.D. x1.406 THK. WALL, 90° ELBOWS.
4
3
APPROX. CUT-LINE IN STEM PL.
FWD.
ROUND-OFF CORNERS.
BKT (3'-0" OFF
6" HOLD THIS DIM.
1 1/2" R. SNIPE.
FORECASTLE DECK. (REF #10)
ACKET
61 62
RCOSTAL (REF #9)
"A"
-8
-9
-7
20.42# STEM PLATING (REF #6)
20.42# PL. STEM (REF #6)

SECT. "14-A" (15) 2 5

CENTERLINE LKG. TO PORT

STBD. SIM. OPPOSITE HAND

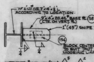
1 1/2"=1'-0"


WF 6"x20# OR 7"x4"x1/2" L ACCORDING TO LOCATION. DET. "5-B"
154
SINGLE SHEAVE CABLE BLOCK FOR SLACK MOORING LINE. (REF #8)
CENTER BLOCK TO SUIT TAUT MOORING LINE.
HEIGHT TO SUIT TAUT MOORING LINE.
TAUT MOORING LINE
13
AFT
"D"
3/16
59
20.42# PLT
9" APPROX.
1 1/2" R. SNIPE.
HEIGHT TO SUIT TAUT MOORING LINE.
MAIN DK.

DET. "13-C" (5) 2 7

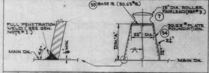
TYP. ELEV. PORT LOOKING TO STB'D. SHOWING ATTACHMENT OF SLACK MOORING LINE ROLLER TO FDN.

1 1/2"=1'-0"


WF 6"x20# OR 7"x4"x1/2" L ACCORDING TO LOCATION.
9"x4"x20.42# BASE PL. (CTR. ON VERT. PL.)
58
1" (45°) SNIPE TYP.
154
BLOCK CENTERED TO SUIT TAUT MOORING LINE (REF #8)

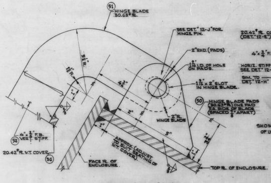
DET. "13-D" (13) 2 7

1 1/2"=1'-0"


55 BASE PL. (30.63# PL.)
15" DIA. ROLLER FAIRLEAD (REF #3)
7
FULL PENETRATION WELD (SEE GEN. NOTE #1)
30.63# PLATE FOUNDATION.
54
22" DIA.
DIM. "A"
2 1/4"
12"
MAIN DK.
45°
1/8" MIN.

DIM. "A"	LOCATION (GEN. NOTE #6)	DECK	HORN LOCATION	UNIT MARK
3'-0"	APPROX. 3'-6" FWD FR. 45 (28'-0" OFF ℄ STBD.	MAIN	AFT - OUTBD.	
↓	↓ ↓ ↓ PORT		AFT - OUTBD.	
	FR. 42 (32'-6" OFF ℄ STBD.		AFT - INBD.	
↓	FR. 42 (32'-6" OFF ℄ PORT.	↓	AFT - INBD.	

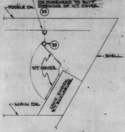
DETAIL "13-B" (5) 7


51
HINGE BLADE 30.63# PL.
SEE DET. "12-J" FOR HINGE PIN.
2" RAD. (PADS)
1 9/16 I.D. OF HOLE ON PADS.
1 9/16 x 2" SLOT IN HINGE BLADE.
50
HINGE BLADE PADS (30.63# PL.) ONE PAD EA. SIDE OF BLADE (SPACED 1/8" APART)
2" R. HINGE BLADE
5 1/2" R.
1 1/2" R.
4 3/4"
2"
1"
5"
3 1/4"
52
4"x3/4" F.B. VERT. STIFF.
20.42# PL. W.T. COVER
36
FACE PL. OF ENCLOSURE.
APPROX. (ADJUST TO SUIT SEATING OF W.T. COVER)
TOP PL. OF ENCLOSURE.

DETAIL "13-A" (12)

SHOWING ARRGT. OF HINGE BLADE

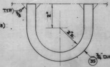
6"=1'-0"


LOCATE 4"x4" STAPLE (DET. "12-G") ON OVERHEAD TO SUIT OPENING OF W.T. COVER.
FOC'SLE DK.
35
35
W.T. COVER.
SHELL.
UNIV. CHOCK W.T. ENCLOSURE
MAIN DK.

DETAIL "12-F"

TYPICAL ARRGT. SHOWING LOCATION OF UNIV. CHOCK W.T. ENCLOSURE COVER OPENING STAPLES.

1/2"=1'-0"

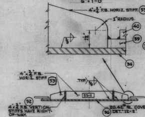

TYP. 3/8
2"
2" R.
35
3/4" DIA. RD. BAR.

DETAIL "12-G" (12)

TYP. OPG. STAPLE FOR W.T. COVER

SIX (6) REQ'D.

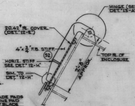
6"=1'-0"


4"x3/4" F.B. HORIZ. STIFF. 53
1" RADIUS.
40
39
1 1/2"
3/8
36
4"x3/4" F.B. HORIZ. STIFF 53
TYP. 3/8
53-1
52
4"x3/4" F.B. VERTICAL STIFFS HAVE RIGHT-OF-WAY.
20.42# PL. COVER. DET. "12-E".
36

DETAIL "12-H" (12)

SHOWING ARRGT. OF HORIZ. STIFF. OF W.T. COVER OF W.T. ENCLOSURE FOR UNIV. CHOCK

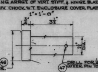
1"=1'-0"


HINGE (SEE DET. "13-A")
20.42# PL. COVER (DET. "12-E")
4"x3/4" F.B. STIFF.
52
HORIZ. STIFF SEE DET. "12-H"
SIM. TO DET. "12-H"
TOP PL. OF ENCLOSURE
2'-8" APPROX.

DETAIL "12-I" (12)

SHOWING ARRGT. OF VERT. STIFF. & HINGE BLADE OF UNIV. CHOCK W.T. ENCLOSURE COVER PLATE.

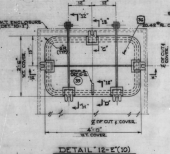
1"=1'-0"


3/4"
3 1/2"
1 1/2" DIA.
46
2 1/2" DIA. SS. BAR.
47
DRILL FOR 1/4" DIA. COTTER PIN TO SUIT.

DETAIL "12-J" (13)

HINGE PIN (SIX REQ'D)

6"=1'-0"

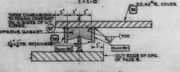

12"
12"
"12"
"12"
W.T. ENCLOSURE (DET. "10-I")
36
20.42# PL. COVER.
6" R (TYP.)
"C"
15"
2'-6" W.T. COVER.
"12"
STAPLE DET. 12-G.
35
"12"
℄ OF CUT & COVER.
"H"
"H"
"D"
℄ OF CUT & COVER.
4'-0" W.T. COVER.

DETAIL "12-E" (10)

ARRGT. OF W.T. COVER FOR UNIV. CHOCK W.T. ENCLOSURE.

THREE (3) REQ'D.

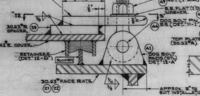
1"=1'-0"


20.42# PL. COVER.
36
THESE DIMENSIONS TO REMAIN CONSTANT ON 4 SIDES OF W.T. COVER.
1"
1"
1"
37
2"x1" NEOPRENE GASKET.
38
1 1/4"x1/4" F.B. RETAINERS.
3/16
TYP.
1"
9600-38-2
9600-38-1
CUT EDGE OF OPG. OF FACE PL.

DETAIL "12-D" (12)

ARRGT. OF GASKET & RELATED RETAINERS.

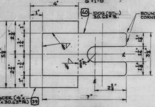
6"=1'-0"


40
DOG (STL.) DET. "12-B"
3 1/2"
1/2"
"12
3/8
30.63# PL. SPACER. 39
36 20.42# PL. COVER.
RETAINERS (DET. "12-D")
9600-38-2
42 DOG BOLT (STL.) DET. "11-H"
49 BRASS HEX NUT (1" DIA.)
S.S. FLAT (1" DIA.) WASHER. 48
3/8" R.
"B"
44 DOG BOLT PIN S.S. (DET. "11-I")
41 DOG BOLT PADS (STL.) DET. "12-A"
30.63# FACE PLATE.
21 22
3/16
3/8
APPROX. 2" TO SUIT INSTALLATION.

DETAIL "12-C" (12)

TYPICAL DOGGING ARRGT. OF W.T. COVER

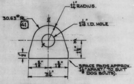
6"=1'-0"


4"
1"
40
DOG (STL.) 30.63# PL.
ROUND-OFF CORNERS.
5 1/2"
2 3/4"
2 3/4"
1"
1 1/4"
1 1/4"
1"
3/8
3/8
5/8" R.
1 1/8"
1 1/4"
1 1/8"
3 1/2"
2 5/8"
7"
SPACER (4"x 5 1/2"x30.63# PL.) 39

DETAIL "12-B" (12)

TYP. ARRGT. OF DOG & SPACER PL.

6"=1'-0"

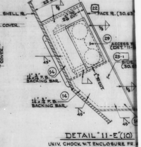

1 1/4" RADIUS.
30.63# PL.
41
1 1/16 I.D. HOLE
1 5/8"
1 5/8"
3 1/4"
SPACE PADS APPROX. 1 1/8" APART (TO SUIT DOG BOLTS).

DETAIL "12-A (12)

DET. OF DOG BOLT PAD

THIRTY (30) REQ'D.

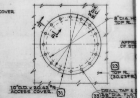
6"=1'-0"


22" @ CTR.
SHELL PL.
22
FACE PL. (30.63
2" TO 2 1/2" CUT.
5/8
29
ACCESS PL (DET. "11-
25-1
SIDE (30.6
45°
14
1 1/4"x3/16" F.B. BACKING BAR.
14
1 1/4"x3/16" F.B. BACKING BAR.
1" TO CUT
45°
45°

DETAIL "11-E" (10)

UNIV. CHOCK W.T. ENCLOSURE FR.

1"=1'-0"

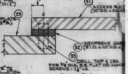

9" DIA. B.C.
8" DIA. HO TOP PL.
APPR OF ST
23
TOP PL. (30.63# PL.)
10" O.D. x 20.42# PL. ACCESS COVER.
31
33
DRILL, TAP & 3/8" DIA. FLAT SCREWS - 1 1/4" EQUALLY SPAC

DETAIL "11-F" (11)

ARRGT. OF TOP ACCESS PLs.

SIX (6) REQ'D.

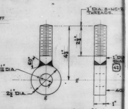
3"=1'-0"


31
ACCESS PLAT (10" O.D. x 20.4
23
TOP PLATE (30.63# PL.)
NEOPRENE GAS (8" I.D. x 10" O.D. x
32
33
DRILL, TAP & CSK. FOR 3/8" DIA. S.S. FLAT HD. MACH SCREWS - 1 1/4" LG.

DETAIL "11-G" (11)

DET. OF TOP ACCESS PL. SECUREMENT.

FULL SIZE

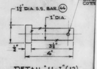

1" DIA. 8-NC-2 THREADS.
2 1/2"
4 1/2"
60°
1 1/16" DIA.
2 1/2" DIA.
1" DIA SHA
42
40
1"

DETAIL "11-H" (12)

DET. OF DOG BOLT

FIFTEEN (15) REQ'D.

6"=1'-0"


45
DRIL COTTE
1 1/2" DIA. S.S. BAR. 44
1" DIA.
1/2"
3 1/2"
4"

DETAIL "11-I" (12)

DET. OF DOG BOLT PIN

FIFTEEN (15) REQ'D.

6"=1'-0"

14 13 12

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

BUILDERS PLAN NO. H-4650-222-00-01

FRAME 5 OF 7

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

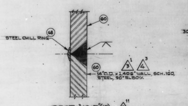
8X

BUILDERS PLAN NO. H-4650-222-00-01

FRAME 6 OF 7

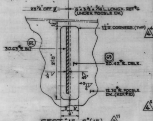
BILL OF MATERIAL (PER SHIP)

REV.	ITEM Nº	Nº REQ'D	DESCRIPTION	MATERIAL	MAT'L. SPECS	PATTERN	REMARKS
2^6	58	3	12"x4"x 20.42# PL. EA.	STEEL	ABS GR. "A"		CUT TO SUIT DET. "13-D" INSTALLATION.
2^6	59	3	18"x12"x 20.42# PL. EA.	↓	↓		CUT TO SUIT DET. "13-C" INSTALLATION.
$3^2 2^{12}$	60	4	14"O.D. x 1.406" THK. WALL, 90° ELBOWS.	FORGED STEEL	ASTM A-234		SCH. 160 (LONG RADIUS = 21") SIM. TO BABCOX & WILC
	61	1	2'-0"x 2'-6"x 30.63# PL.	STEEL	ABS GR. "A"		CUT TO SUIT INSTALLATION.
	62	2	2'-0"x 3'-0"x 30.63# PL. EA.				
	63	2	18"x 14"x 30.63# PL. EA.				
	64	1	6'-0"x 2'-0"x 30.63# PL				
	65	2	2'-3"x 8"x 20.42# PL. EA.		↓		↓
	66	6	3/4" DIA. THREADED STUDS (2" LG. EA.)	↓	CARBON STL. UNTREATED		10 THDS. PER INCH (BETH. FASTENER CAT. 436 PG. 137)
	67	6	BRASS WING NUTS TO SUIT 3/4" DIA. BOLT (10 TPI)	BRASS	COMM.		McMASTER-CARR CAT. 82 PG. 1419A FIG. 92771D038
3^3	68	4	WELDING RINGS (FOR B/M ITEM Nº 60).	LOW-CARBON STEEL	COMM.		SIM. TO TUBE-TURN CAT. Nº 311 PG. 78 (DBL. EXTRA STRONG - PART Nº 98 - G.)
	69	1	4'-0"x 2'-6"x 15.32# PL.		ABS GR. "A"		CUT TO SUIT DETS. "16-A" & "17-B".
	70	1	4'-0"x 2'-6"x 15.32# PL.				↓
	71	2	3/4" DIA. ROUND BAR x 18" LG. EA.	↓	↓		CUT & SHAPE TO SUIT DET. "17-C".
	72	4	1/2" DIA. HEX. HD. BOLT (1 1/2" LG. EA.)	STAINLESS STEEL	TYPE 416		13 THDS. PER INCH
	73	4	HEX. NUT TO SUIT ITEM Nº 72.	↓	↓		1/2" DIA. x 13 THDS. PER INCH.
5^3	74	2	*BASE PLT CHOCK*	*STEEL*	*ABS GR "A"*		*20.42# PLT 4"x8" - CUT TO SUIT*
5^3	75	1	*BASE PLT*	*STEEL*	*ABS GR "A"*		*30.63# PLT - 8"x8"*
5^3	76	2	*HEADERS*	*STEEL*	*ABS GR "A"*		*3"x 3/4" FB - 2'-9" LG*
8^2	77	72	1" I.P.S. COUNTERSUNK PLUG	MAL. IRON	COMM.		FIG. 2075M (FLAGG FITTING CAT. I-64 PG. 49)



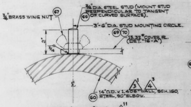
STEEL CHILL RING
68
60
14"O.D. x 1.406" WALL, SCH. 160, STEEL, 90° ELBOW.
3
4

SECT. "16-D"(15) 2
TYP. ELBOW BUTT WELD
NO SCALE



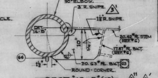
23 1/2" OFF ℄
2-3 1/2"x 5/16" L. LONG, REF #G (UNDER FOCSLE DK)
1 1/2" R. CORNERS (TYP)
30.63# PL. BKT.
65
20.42# PL. DBLR.
12.76# PL. FOCSLE DK. (REF #10)

SECT. "15-C"(15) 2
STBD. SIDE SHOWN - PORT SIM. OPP. HAND
1 1/2" = 1'-0"



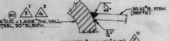
3/4" BRASS WING NUT
67
66
3/4" DIA. STEEL STUD (MOUNT STUD PERPENDICULAR TO TANGENT OF CURVED SURFACE).
3'-6" DIA. STUD MOUNTING CIRCLE.
69 70
15.32# COVER PL. (DET. "16-A")
60
14"O.D. x 1.406" WALL, SCH. 160, STEEL, 90° ELBOW.

SECT. "16-C"(15) 2
TYP. WING NUT HOLD DOWN ARR'G'T. FOR SPLIT COVER PLATES.
6" = 1'-0"



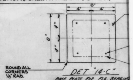
60
14"O.D. x 1.406" THK. WALL, STEEL, 90° ELBOW.
3" R. SNIPE
1 1/2" R. SNIPE.
DET. "14-B"
20.42# PL. STEM (REF #6)
17.87# PL. BKT. (REF #6)
66
30.63# PL. BKT. 63
ROUND-CORNER.

SECT. "15-B"(15) 2 5
STBD. BKT. SHOWN - PORT SIM. OPP. HAND
1 1/2" = 1'-0"



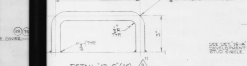
60
3
4
14"O.D. x 1.406" THK. WALL, STEEL, 90° ELBOW.
45°
20.42# PL. STEM (REF #6)

DET. "14-B"(15) 2
NO SCALE



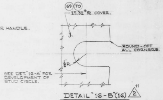
8"
4"
4"
ROUND ALL CORNERS 1/8" RAD.

DET. "14-C"
BASE PLATE FOR FLG BEARING
4 5 3"=1'-0"



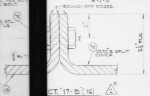
71
3/4" DIA. RD. BAR HANDLE.
7"
3"
69 70
COVER

DETAIL "17-C"(16) 2
DET. OF SPLIT COVER LIFTING HANDLE
6" = 1'-0"



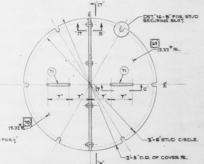
69 70
15.32# PL. COVER.
ROUND-OFF ALL CORNERS.
SEE DET. "16-A" FOR DEVELOPMENT OF STUD CIRCLE.

DETAIL "16-B"(16) 2
FULL SIZE



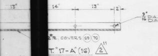
ROUND-OFF EDGES.
72
70
15.32# PL. SPLIT COVER.
2 1/2" FLG.
69

SECT. "17-B"(16) 2
DET. SPLIT COVER FLG. & SECURING BOLT.
FULL SIZE



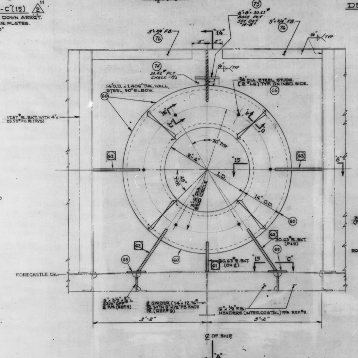
"17"
DET. "16-B" FOR STUD SECURING SLOT.
69
15.32# PL.
71
71
7"
7"
7"
7"
"C"
15.32# PL. 70
3'-6" STUD CIRCLE.
3'-8" O.D. OF COVER PL.
"A"

DETAIL "16-A" 2
DETAIL OF SPLIT, PORTABLE COVER PLATE
ONE (1) REQUIRED
1 1/2" = 1'-0"



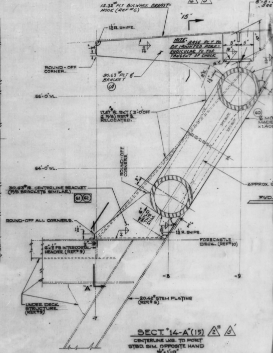
13"
14"
13"
9/16" DIA. HOLES (TYP) FOR 1/2" DIA. BOLTS.
PL. COVERS 69 70
ARR'G'T.

SECT. "17-A"(16) 2
SPLIT COVER SECURING BOLTS
1 1/2" = 1'-0"



75
6"x6" 30.63# BASE PLT SEE DET "14-C"
9"x 3/4" F.B. 76
"14"
74
20.42# PLT CHOCK
3/4" DIA. STEEL STUDS (2" LG.) TYP. ON INBD. SIDE. 66
14"O.D. x 1.406" THK. WALL, STEEL, 90° ELBOW.
60
17.87# PL. BKT. WITH 4"x 23.55# FC PL. (P/S)
30° TYP.
63
I.D.
14" O.D.
3'-6" DIA. STUD CIRCLE
"15"
"B"
60
62
30.63# PL. BKT. (P&S)
65
61
30.63# PL. BKT. (ON ℄)
FORECASTLE DK.
6"x 3 1/2" x 5/16" L. (REF #9)
℄ GIRDER (14"x 12.76#) WITH 5"x 1/2" FB FACE (REF #9)
6"x 1/2" F.B. HEADERS (INTERCOSTAL) P/S REF #9.
3'-2"
3'-2"
℄ OF SHIP
"A"

VIEW "15-A"(14) 2 3 4 5
ELEV. AT CENTERLINE LKG. FWD.
1 1/2" = 1'-0"



15.32# PLT BULWARK BREAST-HOOK (REF #6)
1 1/2" R. SNIPE.
"15"
NOTE: BASE PLT TO BE MOUNTED PERPENDICULAR TO TOP TANGENT OF CHOCK
ROUND-OFF CORNER.
30.63# PLT ℄ BRACKET 64
66'-0" WL.
17.87# PL. BKT. (3'-0" OFF ℄ P/S) REF #6. RELOCATED.
ROUND-OFF CORNERS.
64'-0" WL.
30.63# PL. CENTERLINE BRACKET (P/S BRACKETS SIMILAR.) 61 62
ROUND-OFF ALL CORNERS.
6"x 3/4" FB INTERCOSTAL HEADER (REF #9)
1 1/2" R. SNIPE.
FORECASTLE DECK. (REF #10)
APPROX.
FWD.
-8
-9
"A"
UNDER DECK STRUCTURE (REF #9)
20.42# STEM PLATING (REF #6)
-7
60

SECT. "14-A"(15) 2 5
CENTERLINE LKG. TO PORT
STBD. SIM. OPPOSITE HAND
1 1/2" = 1'-0"

17 16 15 14

49957 (Rev.A 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING		
THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C-25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K		CWE 301 SAW (Single)
(Lincoln 860-0 Flux)		CWE 302 - CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M	CWE 108 SMAW (Fillet Welds 9018M)
	11018M	(Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

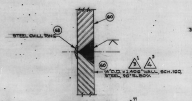
I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A-514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

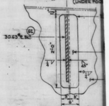
NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3



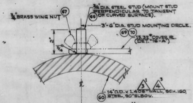
68
STEEL CHILL RING
60
60
14" O.D. x 1.406" WALL, SCH. 160, STEEL, 90° ELBOW.
3
1
4
3

SECT. "16-D"(15) 2 11
TYP. ELBOW BUTT WELD
NO SCALE



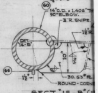
23½" OFF ℄
6" x 3½" x 5/16"
(UNDER FOC
62
30.63# PL. BKT.
2'-0"
1/4
45°
1/4
3"
3"
6"

SECT. "15-C"(15)
STBD. SIDE SHOWN - PORT SIM. OP
1½" = 1'-0"



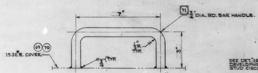
¾" BRASS WING NUT
67
¾" DIA. STEEL STUD (MOUNT STUD PERPENDICULAR TO TANGENT OF CURVED SURFACE).
66
3'-6" DIA. STUD MOUNTING CIRCLE.
69
70
15.32# COVER PL. (DET. "16-A")
2"
3/16
℄
3
1
4
3
14" O.D. x 1.406" WALL, SCH. 160, STEEL, 90° ELBOW.
60

SECT. "16-C"(15) 2 11
TYP. WING NUT HOLD DOWN ARR'G'T.
FOR SPLIT COVER PLATES.
6" = 1'-0"



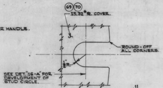
60
14" O.D. x 1.406" TH
90° ELBOW.
3" R. SNIPE.
DET. "14-B"
1½" R.
10"
5/16
66
1½"
30.63# PL.
ROUND-CORN

SECT. "15-B"(1
STBD. BKT. SHOWN - PORT SIM
1½" = 1'-0"



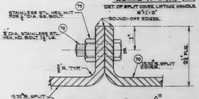
7"
71
¾" DIA. RD. BAR HANDLE.
½" R. TYP.
3"
69
70
15.32# PL. COVER
3/16
TYP.

DETAIL "17-C"(16) 2 11
DET. OF SPLIT COVER LIFTING HANDLE
6" = 1'-0"



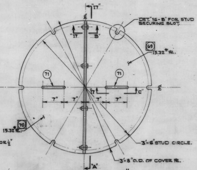
69
70
15.32# PL. COVER.
ROUND-OFF ALL CORNERS.
½" R.
SEE DET. "16-A" FOR DEVELOPMENT OF STUD CIRCLE.

DETAIL "16-B"(16) 2 11
FULL SIZE



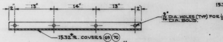
73
STAINLESS STL. HEX. NUT FOR ½" DIA. SS. BOLT.
ROUND-OFF EDGES.
72
½" DIA. STAINLESS STL. HEX. HD. BOLT 1½" LG.
1"
2½" FLG.
⅜" R. TYP.
70
15.32# PL. SPLIT COVER.
15.32# PL. SPLIT COVER.
69

SECT. "17-B"(16) 2 11
DET. SPLIT COVER FLG. & SECURING BOLT.
FULL SIZE



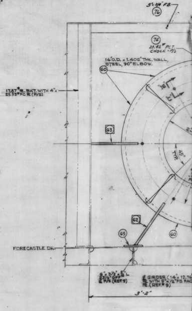
17"
℄
DET. "16-B" FOR STUD SECURING SLOT.
"17
B"
69
15.32# PL.
71
71
℄
17
C"
7"
7"
7"
7"
70
15.32# PL.
3'-6" STUD CIRCLE.
3'-8" O.D. OF COVER PL.
"A"

DETAIL "16-A" 2 11
DETAIL OF SPLIT, PORTABLE COVER PLATE
ONE (1) REQUIRED
1½" = 1'-0"



2"
13"
14"
13"
2"
9/16" DIA. HOLES (TYP) FOR ½" DIA. BOLTS.
15.32# PL. COVERS 69 70

SECT. "17-A"(16) 2 11
ARR'G'T. OF SPLIT COVER SECURING BOLTS
1½" = 1'-0"



3" x ¾" F.B.
76
74
20.42# PLT. CHOCK - P/S
14" O.D. x 1.406" THK. WALL, STEEL, 90° ELBOW.
60
17.87# PL. BKT. WITH 4" x 25.53# FC PL. (P/S)
"16
C"
2'
63
45° TYP.
62
65
60
FORECASTLE DK.
6" x 3½" x ⅝" L 23½" OFF ℄ P/S (REF 9)
℄ GIRDER (14" x 12.76 PL. WITH 5" x ½" FB FAC PL. (REF. 9)
3'-2"

VIEW
ELEV. AT

17

16

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

BUILDERS PLAN NO. H-4650-222-00-01

FRAME 7 OF 7

BILL OF MATERIAL (PER SHIP)

	DESCRIPTION	MATERIAL	MAT'L SPECS	PATTERN	REMARKS	DET. №	REQN. №
CONS	SION MOORING WINCH	VARIOUS			R.H., NO GYPSY HEAD (LAKE SHORE DWG. 58254)	4-A	500025-E
					R.H., WITH GYPSY HEAD (LAKE SHORE DWG. 58254)		
					L.H., WITH GYPSY HEAD (LAKE SHORE DWG. 58254)		
14"D	ORING BITT.	STEEL	ASTM A-131		BETH. STD. DWG: 222-00-4.	8-B	UAO
16"D	ORING BITT.					7-C	UAO
14"x	MOORING CHOCK (COMPLETE)		ASTM A-515 GR.55		BETH. STD. DWG: 222-00-1. (TYPE "A")	6-C	UAO
UNIV	LLER FAIRLEAD. (LONG BASE)	VARIOUS			VENDORS DWG. TO BE ADDED LATER.	7-A	504186
CAPS						4-A	500025-B
3'-6"	53# ⅊ EA (USED TO CONSTRUCT 1 SPECIAL STERN CHOCK	STEEL	ASTM A-515 GR.55		SIM. TO BETH. STD. DWG: 222-00-1 (TYPE "A") AS ALTERED BY DET. "12-A", THIS DRAWING.	12-A	S/O
6"x15	EA. (CHOCK LOWER STIFF.)				CUT TO SUIT CHOCK WALLS (DET. "12-D")	12-D	
4"x15	EA. (CHOCK UPPER STIFF.)				CUT TO SUIT CHOCK WALLS (DET. "12-C")	12-C	
1¼"x	ACKING BAR)		ABS GR."A"		50 FT. LG. (TO CUT)	VARIOUS	
3'-5"	63# ⅊ EA. (CHOCK BASE ⅊.)				CUT TO SUIT DET. "6-D."	6-D	
3'-3"	63# ⅊ EA. (OUTBD. SUPPORT)				CUT TO SUIT DETS. "6-A", "6-B", "4-B", "5-A" & "5-B".	VARIOUS	
3'-3"	63# ⅊ EA. (INBD. SUPPORT)						
12"x	# ⅊ EA. (BASE STIFF)				CUT TO SUIT DETS. "6-B", "6-C" & "6-D."		
9"x1	# ⅊ EA. (BASE ENDS)				CUT TO SUIT DETS. "6-A", "4-B", "5-A" & "5-B"		
1"DIA	OLID PLUG.	MAL. IRON	COMM.		SIM. TO FLAGG FITTING CAT. I-64, FIG. 1074.		SUPPLY
19"x	.84# ⅊ (TOP ⅊ STERN CHOCK)	STEEL	ABS "AH-K"		CUT TO SUIT DETS. "9-A" & "10-A".	9-A 10-A	S/O
8"x1	⅊ EA. (STERN CHOCK STIFF.)				CUT TO SUIT DETS. "10-A", "10-F", "11-D" & "11-E".	VARIOUS	
16"x	3# ⅊ EA. (STERN CHOCK SIDE ⅊s				CUT TO SUIT DETS. "9-A" & "10-A".	9-A 10-A	
3'-5	0.63# ⅊ (FWD. FACE ⅊.)				CUT TO SUIT DET. "9-A" & "10-A".	9-A 10-A	
3'-2	0.63# ⅊ (AFT FACE ⅊.)				CUT TO SUIT DET. "10-A" (SIM. TO DET. "9-A", BUT SHORTENED.)	10-A	
UNIV	LLER FAIRLEAD (SHORT BASE)	VARIOUS			VENDOR'S DWG. TO BE ADDED LATER.	9-A	504186
6⅝"	# ⅊ (BASE FOR STERN LIGHT)	STEEL	ABS GR."A"		CUT TO SUIT PLAN VIEW "8-C"		
2"DI	STAN (BASE SUPPORT)	STEEL	ASTM A-53 TY"E"		CUT TO SUIT - 6" LNG - DET "10-A" & "9-A"	9-A 10-A	
3/8"	AD MACH SCREWS	CRES (18-8)	COMM'L		LENGTH 1¼"		504130-B
3/8"					FOR PC № 27		504130-B
3/8"	ERS				FOR PC № 27		504130-B
1" I.P.S.	UNK PLUG	MAL. IRON	COMM'L.		FIG. 2075 M (FLAGG FITTING CAT. I-64 PG. 49)	8-B 7-C	504103

• GENERAL NOTES •

1. ALL WELDING TO BE IN ACCORDANCE WITH A.B.S. RULES.
2. ALL STRUCTURAL MATERIAL TO BE MILD STEEL (MA) CONFORMING TO A.B.S. GRADE "A" EXCEPT AS NOTED.
3. ALL SNIPES TO BE 1½" RADIUS, UNLESS OTHERWISE NOTED.
4. LOCATION OF ALL BITTS ONBOARD SHIP TO BE APPROVED BY OWNERS INSPECTOR PRIOR TO FINAL WELDING.
5. BASES OF BITTS TO FOLLOW SHEER AND SHALL BE LEVEL ATHWARTSHIP.
6. INTERIOR SURFACES OF DECK FITTINGS, FOUNDATIONS AND DECKS TO BE PREPARED AND COATED IN ACCORDANCE WITH REF. #4.
7. △1³ NUMBER DESIGNATION OF WINCHES INDICATED BY NUMERALS IN SQUARE BOXES ADJACENT TO WINCHES.
8. △4² FOR FOAM IN BASE OF MOORING FITTINGS SEE GEN. NOTE 19A ON REF. # 4.

• RESERVATIONS •

△4¹ ~~1. INFORMATION FOR FOAM IN BASE OF MOORING FITTINGS TO BE ADDED LATER.~~

UNIT № 9590	
O.D. MK.	DATE
PC № 13-23 222-1-21.2 222-11-8	3-20-78
25	12-21-78

UAO-5049

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.	
1	11/29/77	5 5 5/3	1. IN DET. "4-A" INDICATED LEAD OF ROPE FROM ℄ WINCH THRU ℄ CHOCK AT STERN. 2. IN DET. "4-A" INDICATED MOORING WINCH AND CAPSTAN CONTROLS. 3. ADDED GEN. NOTE #7 AND INDICATED NUMBERING OF MOORING WINCHES IN DET. "4-A". ITEMS #1 & 2 PER G.G.S. LTR. DATED 6/17/77 FILE № 5587/612. ITEM #3 PER DEVELOPMENT.	JTS	U.S.C.G. 4-5-78 ABS 3-10-78 U.S.P.H. 1-5-78 J.L.M.	
2	2/28/78	5 5	1. INDICATION OF CAPSTAN CONTROL STAND RELOCATED 2. IN DET. "4-A" RELOCATED CAPSTAN PORT ONLY, FROM 6" FWD OF FR. 236 TO 12" FWD OF FR. 236 TO AGREE WITH FDN. DWG. H4650-129-10-13. ABOVE PER DEVELOPMENT.	JTS.	J.L.M. A.B.S. 4-12-78 3/17/78	NEW SAUL U.S.C.G. 5/1/78 G.G.S. 4/6/78
3	6/12/78	5.	1. IN DET. "4-A", OUTBD., 14" x 24" CLOSED CHOCKS ON TRANSOM, RELOCATED FROM 35'-2" OFF ℄ P/S TO 36'-1" OFF ℄ P/S. ABOVE PER DEPARTURE № 058.	JTS	J.L.M. 6/14/78	USPHS 7-7-78
4	7/18/78	3 3	1. DELETED RESERVATION № 1. 2. ADDED GENERAL NOTE № 8. ABOVE PER DEVELOPMENT.	JTS	7/18/78	USPHS 8-8-78 ABS 8-28-78 USCG 9-20-78
5	11/29/78	8 9,10 3	1. ADDED PLAN VIEW "8-C". 2. ADDED STERN LIGHT FDN TO DETS "9-A" & "10-A". 3. ADDED ITEMS № 25 TO 29 IN B/M. ABOVE ITEMS PER DEVELOPMENT.	J.A.L.	J.L.M. 12/7/78	USPHS 12-15-78 ABS 2-7-79 USCG 2-26-79
6	11/6/79	7&8 3	1. IN DETAILS "8-B" & "7-C" ON ALL 14" & 16" DOUBLE MOORING BITTS ADDED SIX COUNTERSUNK PIPE PLUGS. 2. IN B/M ADDED ITEM № 30. ABV. PER Y.I.S. # H-4650-21-1074 DTD. 10-22-79	G.H.	J.L.M. 11/30/79	ABS 12-18-79 USPH 1-31-80 USCG 12-31-79

4651			4650
4650			4650
HULL	DESIGN		CHARGE

JOB NO. 222

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN
DATE 29 APRIL 1977
DRAWN J. SOLLERS
IN CHARGE L. THADEN
CHECKED
EXAMINED
REVIEWED 21-1 DEPT. 4/29/77.
APPROVED

PLAN NO. H-4650-222-00-02
ALT. NO. 6²

MOORING ARRG'T. & DETAILS AFT OF FR. 157

HULL	APPROVAL LETTERS				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-17-77				
A.B.S.	8-29-77	4-12-78			
U.S.C.G.	8-19-77	4-5-78			
LLOYD'S R.S.	╳				
U.S.P.H.S.	1-5-78				

KEY PLAN

REFERENCE PLANS

NO.	PLAN NO.	TITLE
7	-129-05-04	SHELL EXPANSION FR. 153½ AFT.
6	-129-05-06	BULWARK, FR. 153½ AFT.
5	-231-00-06	AWNING LAYOUT AND DETAILS.
4	-161-00-01	PAINT SCHEDULE.
3	-142-00-01	HATCH AND SCUTTLE LIST.
2	-129-10-10	FDNS. MOORING WINCHES AFT.
1	H4650-129-06-14	DETS. ON DK. CONTAINER GUIDES HOLD #9.

DATE OF ISSUE

	ALTERATION	–	–	–	1/2	1/3	2/2	2/3	3/1	4/2	5/2	5/3	6/3
	ENGINEERING DISTRIBUTION	4/12/77	5/20/77	6/1/77	12/21/77	12/21/77	3/27/78	3/28/78	6/14/78	7/20/78	12/8/78	12/12/78	12/6/79
MAIL	OWNERS		4		2		4		2	2	2		2
	AMERICAN BUREAU		3		3		3		3	3	3		3
	LLOYD'S R.S.												
	U.S.M.A.		2		1		1		1	1	1		1
	U.S. NAVY												
	U.S.C.G.		2		2		2		2	2	2		2
	JOINER CONT'R.												
	USPH		3		3		3		3	3	3		3
INSPECTION	OWNER'S INSP.		1		1		1				1		
	AM. BU. INSP.					1P		1	1	1		1	1
	LLOYD'S INSP.												
	U.S.M.A. INSP.		1		1		1				1		
	U.S. NAVY INSP.												
	U.S.C.G. INSP.					1P		1	1	1		1	1
	CD SCHAUB							1	1	1		1	1
OFFICE	HULL DRAFT.-21			1P		1P		1	1	1		1	1
	MACH. DRAFT.-22			2P		2P		2	2	2		2	2
	ELEC. DRAFT.-23			1P		1P		1	1	1		1	1
	OUTFIT. DRAFT.-25												
	ESTIMATING												
	WAWOOD	2P		1P		1P		1	1	1		1	1
MISC.	PRODUCTION (BCD)												
	ORDER DEPT.												
	JOINER CONT. YARD												
	TOTAL ENG'R. DIST.	2	16	5	13	7	16	8	19	19	13	8	19
	YARD DISTRIBUTION	/	5/20/7	6/1/7	12/21/7	12/21/7	3/30/78	6/30/78	7/21/78	12/13/78	12/7/79		
YARD	UAO-OFFICE						1	1	1	1	1		
	P McNAIR		2P			1P	1	1	1	1	/		
	PIECE RATE-11			1P		1P	1	1	1	1	1		
	TEST DEPARTMENT												
	SHIP SUPT						1	1	1	1	1		
	PLANNING			1P		1P	1	1	1	1	1		
STRUCTURAL	GROUND ASSEMBLY						2	2	2	2	2		
	35 DEPT.						2	2	2	2	2		
	R. LEVY						1	1	1	1	/		
	NO. WAY												
	NO. WAY												
	NO. WAY												
	NO. WAY												
	STRUCT. SUPER.						2	2	2	2	2		
	OPTICAL DETAIL-45			2P	1	2P	2	2	2	2	2		
	WET DOCK												
MACH'Y & OUTFIT.	PIPE SHOP-52						2	2	2	2	2		
	OUTFIT. #1 PIER						1	1	1	1	1		
	PIPE DRAFT.-52						2	2	2	2	2		
	BOILER SHOP-58						1	1	1	1	1		
	OUTSIDE MACH.-60						1	2	3	3	3		
	Q-MATIC						1	1	1	1	1		
	ELECTRIC SHOP-70												
	SHEET MET. SHOP-74						1	–	–	–			
	COPPER SHOP-51												
	PAINT SHOP-75						1	1	1	1	1		
OTHER	WELDING												
	RIGGING DEPT.						2	2	2	2	2		
	MOLD LOFT-41						1	1	1	1	1		
	BRACKET SHOP												
	QUALITY ASSURANCE							1	1	1	/		
	R. MILLER										1		
	TOTAL YARD DIST.	/	2	4	1	5	23	28	28	29	27		

4650-51-ALT. 2²
4651-51-ALT. 3²
4650-51-ALT. 4²
4650-51-ALT. 5²
BLSE²

H-472

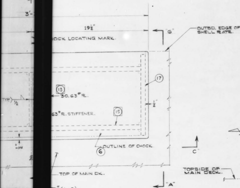
SCHED SUB & PRL ISSUE 3-1-7

SQ.FT.

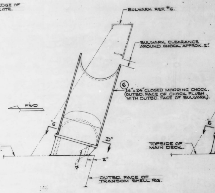
3

2

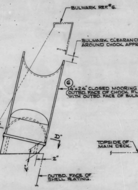
1


OUTBD.
3'-
19½"
"G"
OUTBD. EDGE OF SHELL PLATE.
OCK LOCATING MARK.
17
13
30.63# PL.
TYP.
½
63# PL. STIFFENER.
15
½"
6
OUTLINE OF CHOCK.
C"
TOP OF MAIN DK.
"A"

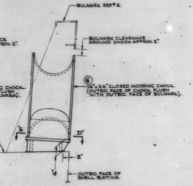
DETAIL D"(4&5)
L ARRGT. C N. BASE PLATE
14"x 24" CL HOCK.
3"=1


BULWARK REF. #6.
BULWARK CLEARANCE AROUND CHOCK APPROX. 2".
6
14"x 24" CLOSED MOORING CHOCK. (OUTBD. FACE OF CHOCK FLUSH WITH OUTBD. FACE OF BULWARK).
FWD
"6
D"
TOPSIDE OF MAIN DECK.
2"
4"
OUTBD. FACE OF TRANSOM SHELL PLG.

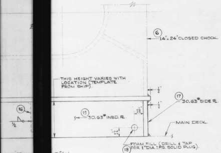
DETAIL "5-B"(5)
ELEV. PORT SIDE LKG. INBD. - STBD.
SIM. OPP. HAND
1½"=1'-0"


BULWARK REF. #6.
BULWARK CLEARANCE AROUND CHOCK APPROX. 2".
6
14"x 24" CLOSED MOORING CHOCK. (OUTBD. FACE OF CHOCK FLUSH WITH OUTBD. FACE OF BULWARK).
"6
D"
TOPSIDE OF MAIN DECK.
2"
4"
OUTBD. FACE OF SHELL PLATING.

DETAIL "5-A"(5)
ELEV. PORT SIDE LKG. AFT - STBD.
SIM: OPP. HAND
1½"=1'-0"

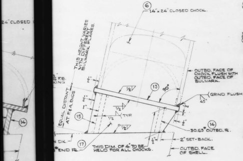

BULWARK REF. #6.
BULWARK CLEARANCE AROUND CHOCK APPROX. 2".
6
14"x 24" CLOSED MOORING CHOCK. (OUTBD. FACE OF CHOCK FLUSH WITH OUTBD. FACE OF BULWARK).
"6
D"
TOPSIDE OF MAIN DECK.
2"
4"
OUTBD. FACE OF SHELL PLATING.

DETAIL "4-B"(4)
ELEV. PORT SIDE LKG. AFT - STBD.
SIM. OPP. HAND
1½"=1'-0"


6
14"x 24" CLOSED CHOCK.
THIS HEIGHT VARIES WITH LOCATION (TEMPLATE FROM SHIP).
½"
17
30.63# SIDE PL.
16
15
30.63# INBD. PL.
½
1½"
MAIN DECK.
18
FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG).

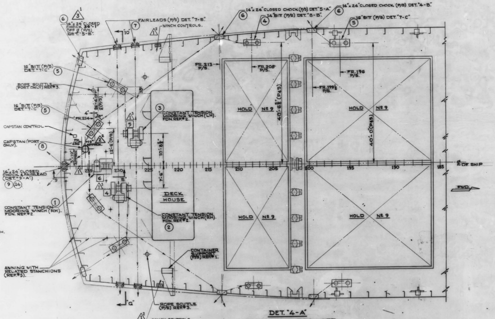
DETAIL C"(6)
3"

RESERVATION Nº2


24" CLOSED
6
14"x 24" CLOSED CHOCK.
THIS HEIGHT VARIES WITH DIFFERENT BULWARK FLARES.
EQUAL DISTANT AT F&A ENDS
F.B.
KING
14
½
13
90°
GRIND FLUSH.
45°
1"
15
TYP.
½
OUTBD. FACE OF CHOCK FLUSH WITH OUTBD. FACE OF BULWARK.
14
30.63# OUTBD. PL.
2" SET-BACK.
N DK.
17
# END PL.
THIS DIM. OF 4" TO BE HELD FOR ALL CHOCKS.
OUTBD. FACE OF SHELL.

"(6)

DETAIL "6-A"(6)
3"=1'-0"

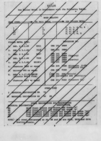

6
3
14"x 24" CLOSED CHOCK 36'-1" OFF ℄ (P/S) DET. "5-B".
FAIRLEADS (P/S) DET. "7-B".
7
10"
1
WINCH CONTROLS.
14"x 24" CLOSED CHOCK (P/S) DET. "5-A".
14" BITT (P/S) DET. "8-B".
4
14"x 24" CLOSED CHOCK (P/S) DET. "4-B".
16" BITT (P/S) DET. "7-C"
5
16" BITT (P/S) DET. "7-C"
ROPE SCUTTLE (PORT ONLY) REF. #3.
16" BITT (P/S) DET. "7-C"
CAPSTAN CONTROL
CAPSTAN (PORT ONLY).
8
14"x 24" CLOSED CHOCK & FAIRLEAD (DET. "9-A".)
9
24
1
CONSTANT TENSION MOORING WINCH (RH). FDN. REF. #2.
AWNING WITH RELATED STANCHIONS (REF. #5).
FR. 213 P/S.
FR. 208 P/S.
FR. 196 P/S.
FR. 199½ P/S.
FR. 234
FR. 236
26'-4" OFF ℄ (P/S)
12'-6" (P/S)
5'-10" APPROX.
12" APPROX.
4"
36°
2
3
CONSTANT TENSION MOORING WINCH (LH). FDN. REF. #2.
5
6
4
10'-8⅝"
7'-6"
235
230
225
220
215
210
205
200
195
190
185
℄ OF SHIP
"B"
DECK HOUSE
CONSTANT TENSION MOORING WINCH (RH). FDN. REF. #2.
2
HOLD Nº 9
HOLD Nº 9
HOLD Nº 9
HOLD Nº 9
40'-6⅝" (P&S)
40'-0" (P&S)
FWD.
CONTAINER SUPPORT (P/S) REF. #1.
"G"
ROPE SCUTTLE (P/S) REF. #3.
WINCH CONTROLS.

DET. "4-A"
PLAN - MAIN DECK AFT
⅛"=1'-0"

BILL OF MATE

REV.	ITEM Nº	Nº REQ'D	DESCRIPTION	MATERIAL	MAT'L SPECS	PATT
	1	1	CONSTANT TENSION MOORING WINCH	VARIOUS		
	2	1	↓	↓		
	3	1	↓	↓		
	4	2	14" DOUBLE MOORING BITT.	STEEL	ASTM A-131	
	5	6	16" DOUBLE MOORING BITT.		↓	
	6	6	14"x 24" CLOSED MOORING CHOCK. (COMPLETE)	↓	ASTM A-515 GR.55	
	7	4	UNIVERSAL ROLLER FAIRLEAD. (LONG BASE)	VARIOUS		
	8	1	CAPSTAN	↓		
	9	2	3'-6"x 3'-2"x 25.53# PL. EA. (USED TO CONSTRUCT 1 SPECIAL STERN CHOCK	STEEL	ASTM A-515 GR.55	
	10	2	6"x 15"x 25.53# PL. EA. (CHOCK LOWER STIFF.)			
	11	2	4"x 15"x 25.53# PL. EA. (CHOCK UPPER STIFF.)		↓	
	12	1	1¼"x 3/16" F.B. (BACKING BAR)		ABS GR."A"	
	13	6	3'-5"x 16"x 30.63# PL. EA. (CHOCK BASE PL.)			
	14	6	3'-3"x 6"x 30.63# PL. EA. (OUTBD. SUPPORT)			
	15	6	3'-3"x 9"x 30.63# PL. EA. (INBD. SUPPORT)			
	16	6	12"x 8"x 30.63# PL. EA. (BASE STIFF)			
	17	12	9"x 16"x 30.63# PL. EA. (BASE ENDS)	↓	↓	
	18	32	1" DIA. I.P.S. SOLID PLUG.	MAL. IRON	COMM.	
	19	1	19"x 4'-8"x 40.84# PL. (TOP PL. STERN CHOCK)	STEEL	ABS "AH-K"	
	20	2	8"x 17"x 40.84# PL. EA. (STERN CHOCK STIFF.)			
	21	2	16"x 3'-8"x 30.63# PL. EA. (STERN CHOCK SIDE PLs			
	22	1	3'-5"x 5'-6"x 30.63# PL. (FWD. FACE PL.)			
	23	1	3'-2"x 5'-6"x 30.63# PL. (AFT FACE PL.)	↓	↓	
	24	1	UNIVERSAL ROLLER FAIRLEAD (SHORT BASE)	VARIOUS		
5^2	25	1	8⅝"x 8½"x 15.32# PL. (BASE FOR STERN LIGHT)	STEEL	ABS GR."A"	
5^2	26	1	2" DIA SCH 40 STAN (BASE SUPPORT)	STEEL	ASTM A-53 TY"E"	
5^2	27	4	3/8" DIA FLAT HEAD MACH SCREWS	CRES (NB8)	COMM'L	
5^2	28	4	3/8" NUTS			
5^2	29	4	3/8" LOCKWASHERS	↓	↓	
6^2	30	48	1" I.P.S. COUNTERSUNK PLUG	MAL. IRON	COMM'L.	

1. ALL
2. ALL
CON
3. ALL
4. LOC
OWN
5. BAS
6. INT
TO
$\triangle 1^3$ 7. NUN
IN S
$\triangle 4^2$ 8. FOR
ON



$\triangle 4^1$ ~~1. INF~~
~~ADE~~

6 5 4 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

BUILDERS PLAN NO. H-4650-222-00-02

FRAME 2 OF 5

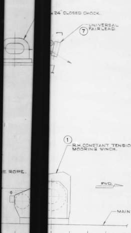
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

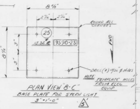
BUILDERS PLAN NO. H-4650-222-00-02

Sep 1980

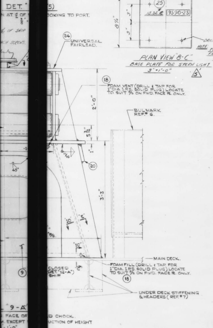
8X

FRAME 3 OF 5

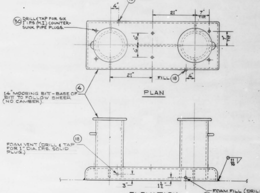

24" CLOSED CHOCK.
⑦ UNIVERSAL FAIRLEAD.
① R.H. CONSTANT TENSION MOORING WINCH.
E ROPE.
FWD.
MAIN DECK.
232
230


8 5/8"
2 7/16"
2 7/16"
ROUND ALL CORNERS
㉕
15.32# PL
9590-25
8 1/2"
3"
3"
FWD
DRILL (4) 13/32" ⌀ HOLES
NOTE: TEMPLATE HOLES FROM ELEC EQUIP

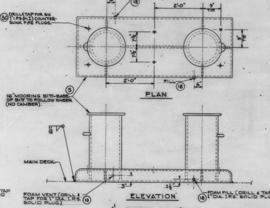
PLAN VIEW "8-C"
BASE PLATE FOR STERN LIGHT
3" = 1'-0"
5


DET. " (5)
N AT ℄ OF LOOKING TO PORT.
℄ OF SHIP
CH SCREWS.
㉔ UNIVERSAL FAIRLEAD.
⑱ FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG) LOCATE TO SUIT 5/8 ON FWD. FACE PL. ONLY.
2'-0"
5 3/16"
1"
11/16
⑳
BULWARK REF.# 6.
3'-3"
45°
"10"
"10"
⑨
CLOSED DET. "12-A")
SHIP
MAIN DECK.
FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG) LOCATE TO SUIT 5/8 ON FWD. FACE PL. ONLY.
⑱
UNDER DECK STIFFENING & HEADERS (REF. # 7)

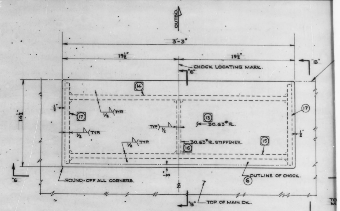
"9-A"
FACE OF D CHOCK.
M. EXCEPT UCTION OF HEIGHT
= 1'-0"


⑱ VENT.
4"
21"
7" TYP.
㉚ DRILL & TAP FOR SIX 1" I.P.S. (M.I.) COUNTER-SUNK PIPE PLUGS.
6"
6"
7" TYP
21"
FILL ⑱
4"
PLAN
④ 14" MOORING BITT - BASE OF BITT TO FOLLOW SHEER (NO CAMBER).
⑱ FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.)
11/16
3"
1 1/2"
ELEVATION
⑱ FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.)

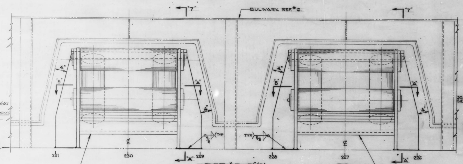
6 DETAIL "8-B" (5)
ARRG'T. OF 14" MOORING BITT - SHOWING POSITION OF FOAM PLUGS.
LOCATE BITTS AS SHOWN ON DETAIL "4-A".
1" = 1'-0"


VENT. ⑱
4"
2'-0"
9" TYP.
㉚ DRILL & TAP FOR SIX 1" I.P.S. (M.I.) COUNTER-SUNK PIPE PLUGS.
7 1/2"
7 1/2"
9" TYP
2'-0"
FILL ⑱
4"
PLAN
⑤ 16" MOORING BITT - BASE OF BITT TO FOLLOW SHEER (NO CAMBER).
11/16
MAIN DECK.
3"
1 1/2"
FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.) ⑱
ELEVATION
⑱ FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.)

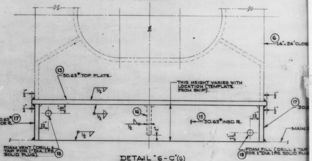
6 DETAIL "7-C" (4 & 5)
ARRG'T. OF 16" MOORING BITT - SHOWING POSITION OF FOAM PLUGS.
LOCATE BITTS AS SHOWN ON DETAIL "4-A".
1" = 1'-0"


OUTBD.
3'-3"
19 1/2"
19 1/2"
"6"
CHOCK LOCATING MARK.
"6"
14 1/2"
1/2"
⑭
⑰
1/2 TYP.
1/2 TYP.
TYP. 1/2
⑬ 30.63# PL.
1/2 TYP.
30.63# PL. STIFFENER.
⑯
⑮
⑰
1/2"
"6
1/2" -IN
ROUND-OFF ALL CORNERS.
OUTLINE OF CHOCK. ⑥
℄
"B"
TOP OF MAIN DK.
"A"

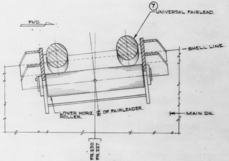
DETAIL "6-D" (4 & 5)
TYPICAL ARRG'T. OF FDN. BASE PLATE
FOR 14" x 24" CLOSED CHOCK.
3" = 1'-0"


"7"
BULWARK REF.# 6.
"7"
4"
"8"
"A"
4"
4"
"8"
"A"
4"
5/8 TYP.
TYP. 5/8
MAIN DK.
231
230
℄
"A" 229
228
227
℄
"A" 226
⑦ UNIVERSAL FAIRLEAD.
FWD
⑦ UNIVERSAL FAIRLEAD.

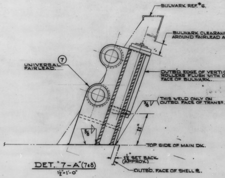
DET. "7-B" (5)
ELEV. PORT SIDE LKG. OUTBD. - SHOWING LOCATION OF
UNIVERSAL FAIRLEADS @ FRS. 227 & 230 - STBD.
SIMILAR OPP. HAND.
1 1/2" = 1'-0"


℄
⑥ 14" x 24" CLOS
⑬ 30.63# TOP PLATE.
THIS HEIGHT VARIES WITH LOCATION (TEMPLATE FROM SHIP).
1/2
1/2"
1/2"
1/2"
1/2"
30.63# SIDE PL. ⑰
1 1/2"
1/2
⑯
1/2
⑮ 30.63# INBD. PL.
1 1/2"
⑰ 30.6
MAIN
1/2
FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG). ⑱
⑱ FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG

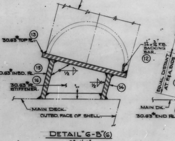
DETAIL "6-C" (6)
3" = 1'-0"


FWD.
⑦ UNIVERSAL FAIRLEAD.
SHELL LINE.
LOWER HORIZ. ROLLER.
℄ OF FAIRLEADER.
MAIN DK.
℄ FR. 230
℄ FR. 227

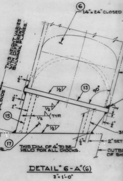
DET. "8-A" (7 & 8)
1 1/2" = 1'-0"


BULWARK REF.# 6.
BULWARK CLEARANCE AROUND FAIRLEAD APPROX. 4"
⑦ UNIVERSAL FAIRLEAD.
OUTBD. EDGE OF VERTICAL ROLLERS FLUSH WITH OUTBD. FACE OF BULWARK.
3/8 THIS WELD ONLY ON OUTBD. FACE OF TRANS. BKT.
5/8
11"
TOP SIDE OF MAIN DK.
1 1/2" SET BACK (APPROX.)
OUTBD. FACE OF SHELL PL.

DET. "7-A" (7 & 8)
1 1/2" = 1'-0"


⑥ 14" x 24" CLOSED CHOCK.
⑬ 30.63# TOP PL.
1 1/4" x 3/16" F.B. BACKING BAR. ⑫
⑮ 30.63# INBD. PL.
1/2
⑯ 30.63# PL. STIFFENER.
1/2
⑭
MAIN DECK.
OUTBD. FACE OF SHELL.

DETAIL "6-B" (6)
3" = 1'-0"


⑥ 14" x 24" CLOSED CH
THIS HEIGHT VARIES WITH DIFFERENT BULWARK FLARES.
EQUAL DISTANT AT F & A. ENDS
1/2"
1/2"
1"
1/2
⑬
90°
1/2
⑮
1/2 TYP.
1/2
1/2"
MAIN DK.
⑰ 30.63# END PL.
THIS DIM. OF 4" TO BE HELD FOR ALL CHOCKS.
1/2"
2" SET-
OUTBD OF SHE
30.

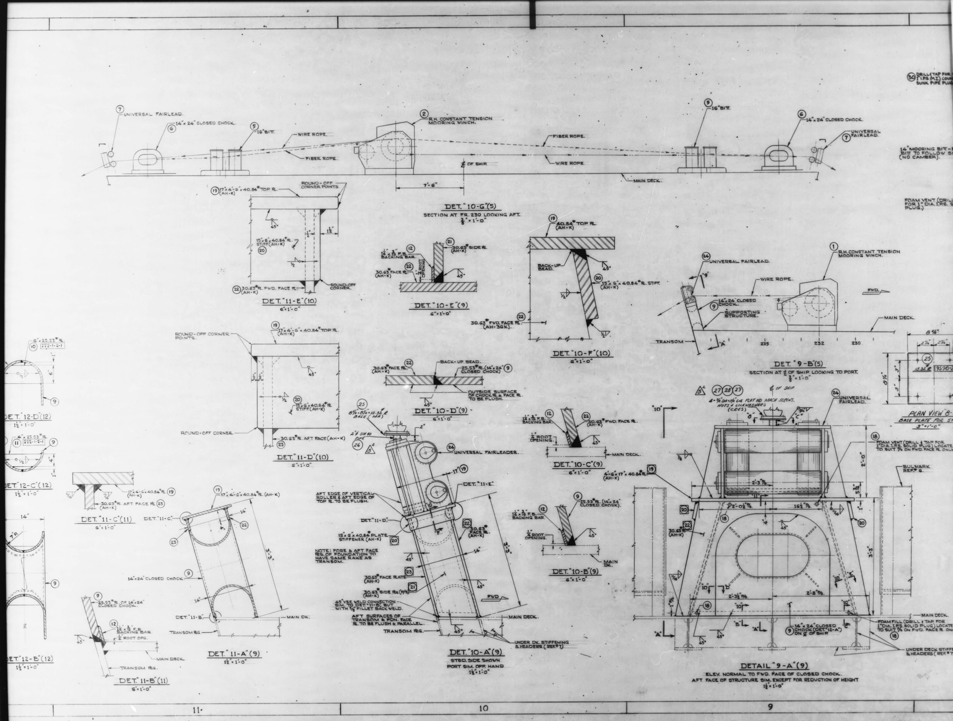
DETAIL "6-A" (6)
3" = 1'-0"

RESERVA

8

7

6


UNIVERSAL FAIRLEAD.
14" x 24" CLOSED CHOCK.
16" BITT.
WIRE ROPE.
FIBER ROPE.
R.H. CONSTANT TENSION MOORING WINCH.
℄ OF SHIP.
7'-6"
MAIN DECK.
14" MOORING BITT-B BITT TO FOLLOW SH (NO CAMBER).
DRILL & TAP FOR 1 I.P.S. (M.I.) COUNTERSUNK PIPE PLUG
FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG.)
DET. "10-G" (5)
SECTION AT FR. 230 LOOKING AFT.
3/8" = 1'-0"
17" x 4'-6" x 40.84# TOP PL. (AH-K)
ROUND-OFF CORNER POINTS.
15" x 6" x 40.84# PL. STIFF. (AH-K)
30.63# PL. FWD. FACE PL. (AH-K)
ROUND-OFF CORNER.
DET. "11-E" (10)
6" = 1'-0"
1/4" x 3" F.B. BACKING BAR.
30.63# SIDE PL. (AH-K)
30.63# FACE PL. (AH-K)
ROOT OPENING
DET. "10-E" (9)
6" = 1'-0"
40.84# TOP PL. (AH-K)
BACK-UP BEAD.
15" x 6" x 40.84# PL. STIFF. (AH-K)
30.63# FWD. FACE PL. (AH-3GK)
DET. "10-F" (10)
6" = 1'-0"
14" x 24" CLOSED CHOCK.
SUPPORTING STRUCTURE.
TRANSOM
FWD.
235
232
230
DET. "9-B" (5)
SECTION AT ℄ OF SHIP LOOKING TO PORT.
3/8" = 1'-0"
ROUND-OFF CORNER POINTS.
17" x 4'-6" x 40.84# TOP PL. (AH-K)
15" x 6" x 40.84# PL. STIFF. (AH-K)
ROUND-OFF CORNER.
30.63# PL. AFT FACE (AH-K)
DET. "11-D" (10)
6" = 1'-0"
30.63# PL. (AH-K)
BACK-UP BEAD.
25.53# PL. (14" x 24" CLOSED CHOCK)
OUTSIDE SURFACE OF CHOCK PL. & FACE PL. TO BE FLUSH.
DET. "10-D" (9)
6" = 1'-0"
1/4" x 3" F.B. BACKING BAR.
30.63# FWD. FACE PL. (AH-K)
1/4" ROOT OPENING.
MAIN DECK.
DET. "10-C" (9)
6" = 1'-0"
8 9/16 x 8 1/16 x 15.32# BASE (MA)
2" SCH 40 PIPE
UNIVERSAL FAIRLEADER.
17"
DET. "11-E"
AFT EDGE OF VERTICAL ROLLER & AFT EDGE OF TOP PL. TO BE FLUSH.
DET. "11-D"
15" x 6" x 40.84# PLATE STIFFENER (AH-K)
NOTE: FORE & AFT FACE PLS. OF FOUNDATION TO HAVE SAME RAKE AS TRANSOM.
30.63# FACE PLATE (AH-K)
30.63# SIDE PLS. (P/S)
45° VEE WELD CONNECTION SIM. TO DET. "11-B" BUT WITH 3/8" FILLET BACKWELD.
AFT SURFACES OF TRANSOM & FDN. FACE PL. TO BE FLUSH & PARALLEL.
TRANSOM PL.
MAIN DECK.
UNDER DK. STIFFENING & HEADERS (REF. 7)
FWD
3'-3"
DET. "10-A" (9)
STBD. SIDE SHOWN PORT SIM. OPP. HAND
1 1/2" = 1'-0"
4-17" x 4'-6" x 40.84# PL. (AH-K)
25.53# PL. (14" x 24" CLOSED CHOCK).
1/4" x 3" F.B. BACKING BAR
1/4" ROOT OPENING.
MAIN DK.
DET. "10-B" (9)
6" = 1'-0"
4-5/8 DIA x 1 1/2 LG. FLAT HD MACH SCREWS, NUTS & LOCKWASHERS (CRES)
℄ OF SHIP
UNIVERSAL FAIRLEAD.
FOAM VENT (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG) LOCATE TO SUIT 7/8 ON FWD. FACE PL. ONLY.
BULWARK REF. 6.
2'-0"
2'-3 9/16
2'-0 1/2 9/16
16 1/2 9/16
2'-3 1/2 9/16
2'-8 9/16
3'-3"
30.63# (AH-K)
MAIN DECK.
14" x 24" CLOSED CHOCK (DET. "12-A") ON ℄ OF SHIP
FOAM FILL (DRILL & TAP FOR 1" DIA. I.P.S. SOLID PLUG) LOCATE TO SUIT 7/8 ON FWD. FACE PL. ONLY.
UNDER DECK STIFFENING & HEADERS (REF. 7)
DETAIL "9-A" (9)
ELEV. NORMAL TO FWD. FACE OF CLOSED CHOCK.
AFT FACE OF STRUCTURE SIM. EXCEPT FOR REDUCTION OF HEIGHT
1 1/2" = 1'-0"
8 9/16
15.32# PL.
9590-25
PLAN VIEW "8-C"
BASE PLATE FOR STEA
3" = 1'-0"
6" x 25.53# PL.
222-1-2-1
DET. "12-D" (12)
1 1/2" = 1'-0"
4" x 25.53# PL.
222-1-2-1
DET. "12-C" (12)
1 1/2" = 1'-0"
17" x 4'-6" x 40.84# PL.
30.63# PL. AFT FACE PL. (AH-K)
DET. "11-C" (11)
6" = 1'-0"
17" x 4'-6" x 40.84# PL. (AH-K)
DET. "11-C"
14"
3'-3"
14" x 24" CLOSED CHOCK.
DET. "11-B"
TRANSOM PL.
MAIN DK.
DET. "11-A" (9)
1 1/2" = 1'-0"
14"
22"
DET. "12-B" (12)
1 1/2" = 1'-0"
25.53# PL. OF 14" x 24" CLOSED CHOCK.
1/4" x 3" F.B. BACKING BAR
1/4" ROOT OPG.
MAIN DECK.
TRANSOM PL.
DET. "11-B" (11)
6" = 1'-0"
11
10
9

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-222-00-02

Sep 1980

8X

FRAME 4 OF 5

49957 (Rev.A 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING		
THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.

1. AWS. A 5.1.69	6011
2. AWS. A 5.1.69	7018
3. AWS. A 5.1.69	6027
4. AWS. A 5.1.69	7024
5. AWS. A 5.5.69	8018C3
6. Chemtron 7000 or equal	
7. Unicore V90 or equal	
8. AWS. A 5.17.69 EM12K (Lincoln 860-0 Flux)	
9. Chemtron 88C3 or equal	
10. AWS A 5.1.69	9018M 11018M
11. AWS A 5.4.69	E310

PROCEDURE NO.

CWE 101 SMAW
CWE 101 SMAW
CWE 101 SMAW
CWE 105 SMAW (Gravity)
CWE 101 SMAW
CWE 105 SMAW (Gravity)
CWE 101 SMAW
CWE 209 FCAW (Fluxcore C-25)
CWE 209 FCAW
CWE 301 SAW (Single)
CWE 302 - CWE 303 SAW (Multiple)
CWE 207 FCAW (Fluxcore CO_2)
CWE 108 SMAW (Fillet Welds 9018M)
(Butt Welds 11018M)
CWE 110 SMAW

STEEL CODE

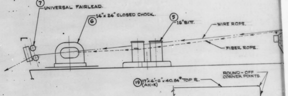
I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A-514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

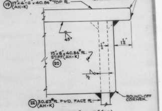
MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3

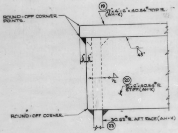


⑦ UNIVERSAL FAIRLEAD.
⑥ 14"x 24" CLOSED CHOCK.
⑤ 16" BITT.
WIRE ROPE.
FIBER ROPE.



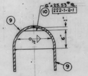
⑲ 17"x 4'-6"x 40.84# TOP R. (AH-K)
ROUND-OFF CORNER POINTS.
45°
1½"
½"
15"x 6"x 40.84# R. STIFF (AH-K) ⑳
½
ROUND-OFF CORNER.
㉒ 30.63# R. FWD. FACE R. (AH-K)

DET. "11-E" (10)
6" = 1'-0"



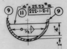
⑲ 17"x 4'-6"x 40.84# TOP R. (AH-K)
ROUND-OFF CORNER POINTS.
45°
½
⑳ 15"x 6"x 40.84# R. STIFF (AH-K)
ROUND-OFF CORNER.
30.63# R. AFT FACE (AH-K) ㉓

DET. "11-D" (10)
6" = 1'-0"



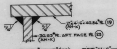
6"x 25.53# R.
⑩ 222-1-2-1
⑨
½
6"
⑨

DET. "12-D" (12)
1½" = 1'-0"



⑨
4"x 25.53# R.
⑪ 222-1-2-1
⑨
½
4"
1"

DET. "12-C" (12)
1½" = 1'-0"

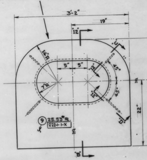


17"x 4'-6"x 40.84# R. (AH-K) ⑲
11/16
11/16
30.63# R. AFT FACE R. (AH-K) ㉓

DET. "11-C" (11)
6" = 1'-0"

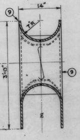
"NOTE"

14"x 24" CLOSED CHOCK, ITEM № ⑨ IS OF SAME MATERIAL, CONFIGURATION AND CONSTRUCTION AS TYPE "A" ON BETH. STD. DWG: 222-00-1; EXCEPT THAT THE BOTTOM SKIRT PLATES HAVE BEEN EXTENDED FOR CUTTING IN AND THE STIFFENING BRACKETS HAVE BEEN ALTERED TO FACILITATE WELDING OF CHOCK TO SUPPORT STRUCTURE.

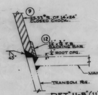


3'-2"
19"
"12"
"C"
14"R
5"
5"
"12"
45°
7"R
45°
"12"
3'-0"
22"
"D"
⑨ 25.53# R.
222-1-1-X
"B"

DET. "12-A" (9)
14"x 24" CLOSED ℄ STERN CHOCK.
ONE (1) REQUIRED
1½" = 1'-0"

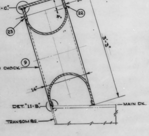


DET. "12-B" (12)
1½" = 1'-0"



⑨ 25.53# R. OF 14"x 24" CLOSED CHOCK.
⑫ 1½"x ⅜" F.B. BACKING BAR.
¼" ROOT OPG.
45°
MAIN DECK.
TRANSOM R.G.

DET. "11-B" (11)
6" = 1'-0"



⑲ 17"x 4'-6"x 40.84# R. (AH-K)
DET. "11-C".
14"
㉒
㉓
3'-3"
⑨ 14"x 24" CLOSED CHOCK.
14"
DET. "11-B".
MAIN DK.
TRANSOM R.G.

DET. "11-A" (9)
1½" = 1'-0"

AFT EDGE OF VERT
ROLLER & AFT EDG
TOP R. TO BE FLUS

15"x 6"x 40
STIFFENER

NOTE: FORE & AFT
RS. OF FOUNDATIO
HAVE SAME RAKE
TRANSOM.

45° VEE WEL
SIM. TO DET
WITH ⅜" FI

AFT
TRA
R. TO

12

11

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-222-00-02

Sep 1980

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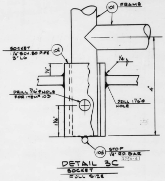
FRAME 5 OF 5

LIST OF MATERIALS							
ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	WT	SOURCE
101	FRAME	15'-6"	STEEL	A.B.S. GR "A"	1" DIA ROUND BAR	SEE GEN. NOTE # 4		
102	SOCKET - STANCHION	3	STEEL	ASTM-A-53-TYE	1¼" SCH 80 PIPE LG = 3"	SEE GEN NOTE #4		
103	DETENT PIN	3	CRES	COM'L	3/8" DIA., 2" GRIP, WITH LANYARD	STD. 231-00-1		
104	SHELTER	1	CANVAS	↓	Nº 6 CANVAS W/WINDOW	GEN. NOTE # 3 (ORDERED ON REF. # 2)		500133
105	STOP	3	STEEL	ABS - GR "A"	¼" DIA ROD 1 5/8" LG	SEE GEN NOTE # 4		
106	SOCKET - FRAME	2	STEEL	ASTM-A-53-TYE	1" SCH 40 PIPE LG = 3"	SEE GEN NOTE # 4		
107	DETENT PIN	2	CRES	COM'L	3/8" DIA. 1½" GRIP, WITH LANYARD	STD 231-00-1		

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	1-3-78	2	1. IN DET. "2-A" DIM. BTWN. CENTER LINE OF PLASTIC WINDOW & TOP OF PLATFORM ADDED	J. W. B.	
		3	2. REVISED DETAIL "3-D" AS SHOWN.		
			3. ADDED ITEMS 106 & 107 AND REVISED ITEMS 101, 102 & 105 IN B/M.		U.S.P.H. 1-25-78
		2	4. ADDED GEN NOTE # 4.		
			ABOVE ITEMS PER G.G. SHARP APPR'D LTR, DATED 11/11/77 - REF SSE7/524.		LT 1/6/78



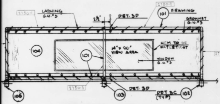
101 FRAME
SOCKET 1¼" SCH. 80 PIPE 3" LG
102
½"
¼
DRILL 7/16" Φ HOLE FOR ITEM # 103
DRILL 1 11/16" Φ HOLE
1¼"
4"
105 STOP ¼" RD. BAR
2750-4

DETAIL 3C
SOCKET
FULL SIZE

GENERAL NOTES:

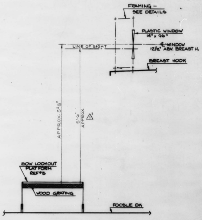
1. ALL WELDING TO BE IN ACCORD W/ABS RULES & REF. # 1
2. ALL GALV. PC'S. DAMAGED BY WELD TO BE TREATED IN ACCORD W/REF. # 4
3. SHELTER TO BE CONSTRUCTED OF # 6 CANVAS. FITTED WITH A TRANSPARENT VINYL PLASTIC WINDOW 14" x 96" x 20 MIL. THICKNESS, AS MFGR BY ROBECO CHEM. INC. FORMULA 3C OR EQUAL, AND GROMMETS. COMPLETED ASSEMBLY TO BE LASHED WITH ¼" DIA. NYLON ROPE SUPPLIED BY VENDOR.
4. GALVANIZE AFTER FABRICATION.

101
¼" Φ HOLE IN ITEM # 101 & 106
# 107
24"



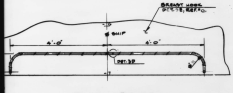
2750-1
LASHING G.N. # 3
2750-2
2½"
DET. 3D
101 FRAMING
GROMMET G.N. # 3
104
101
14" x 96" VIEW AREA
HEM TO BE WATERTIGHT
WINDOW G.N. # 3
2750-3
2750-3
105
103 DET. 3D
DET. 3C (TYP)
102

SECTION 3B
SCALE: 1" = 1'-0"



FRAMING - SEE DETAILS
PLASTIC WINDOW 14" x 96"
℄ WINDOW 12½" ABV. BREAST H.
BREAST HOOK
LINE OF SIGHT
APPROX. 5'8"
5'6" APPROX
BOW LOOKOUT PLATFORM REF. # 5
WOOD GRATING
FOCSLE DK.

DETAIL 2-A
SCALE 1" = 1'-0"



BREAST HOOK DET. 9B, REF. # 6
℄ SHIP
4'-0"
4'-0"
DET. 3D
3
B

PLAN VIEW 3A
BOW LOOKOUT SHELTER
SCALE: 1" = 1'-0"

UHO-501/47

UNIT Nº 2750	
DATE	UNIT MK.
2-24-78	1, 2, 3, 4

NO.	PLAN NO.	TITLE
6	H-4650-129-05-01	SHELL EXP. FR 77 FWD
5	-222-00-04	BOW LOOKOUT PLATFORM
4	161-00-01	PAINTING SHEDULE
3		
2	H-4650-235-00-02	WEATHER CLOTH & COVER LIST
1	STD. 129-00-02	WELDING DETAILS

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 222

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED — DATE 17 OCT. 1977
DRAWN CB/JWB — IN CHARGE L. THADEN
CHECKED LHT — EXAMINED T. L. Mullin
REVIEWED — APPROVED

PLAN NO. H-4650-222-00-03 — ALT. NO. 1

BOW LOOKOUT SHELTER

APPROVAL LETTERS					
HULL 4650-1					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-11-77				
A.B.S.	☒				
U.S.C.G.	N.R.				
LLOYD'S R.S.	☒				
U.S.P.H.S.	10-21-77	1-25-78			

		DATE OF ISSUE				
	ALTERATION	–	–	1	1	1
	ENGINEERING DISTRIBUTION	10-17-7	10-19-7	1-11-8	1-18-8	2-21-8
MAIL	OWNERS	4		2		
	AMERICAN BUREAU					
	LLOYD'S R.S.					
	U.S.M.A.					
	U.S. NAVY					
	U.S.C.G.	3				
	JOINER CONT'R.					
	USPH	3		3		
INSPECTION	OWNER'S INSP.			1		1
	AM. BU. INSP.					
	LLOYD'S INSP.					
	U.S.M.A. INSP.			1		1
	U.S. NAVY INSP.					
	U.S.C.G. INSP.					
	CDSchaub					1
OFFICE	HULL DRAFT. - 21		1P		1P	1
	MACH. DRAFT. - 22		2P		2P	2
	ELEC. DRAFT. - 23		1P		1P	1
	OUTFIT. DRAFT. - 25					
	ESTIMATING					
	21-1 DWRwood		1P		1P	1
MISC.	PRODUCTION (BCD)					
	ORDER DEPT.					
	JOINER CONT. YARD					
	TOTAL ENG'R. DIST.	10	5	7	5	8
	YARD DISTRIBUTION	10-17-7	10-19-7	1-11-8	1-18-8	2-28-78
YARD	UAO					1
	PMcNair	2P			1P	1
	PIECE RATE - 11		1P		1P	1
	TEST DEPARTMENT					
	Q-ASSURANCE					1
	PLANNING		1P		1P	1
STRUCTURAL	GROUND ASSEMBLY					2
	55 DEPT.					2
	H. LEVY					1
	SHIP SUPT.					1
	NO. WAY					
	NO. WAY					
	NO. WAY					
	NO. WAY					
	STRUCT. SUPER.					2
	OPTICAL DETAIL-45		2P	1	2P	2
	WET DOCK					
MACH'Y & OUTFIT.	PIPE SHOP - 52					2
	OUTFIT. #1 PIER					1
	PIPE DRAFT. - 52					2
	BOILER SHOP - 58					1
	OUTSIDE MACH. - 60					1
	ELECTRIC SHOP - 70					
	SHEET MET. SHOP - 74					
	COPPER SHOP - 51					
	PAINT SHOP - 75					1
OTHER	WELDING					
	Q-MATERIAL					1
	MOLD LOFT - 41					1
	BRACKET SHOP					
	TOTAL YARD DIST.	2	4	1	5	25

Sen 1st Sub G-20-77

H-473

10.6 SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980

8X

BUILDERS PLAN NO. H-4650-222-00-03

FRAME 1 OF 2

49957 (Rev.A 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C-25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860-0 Flux)		CWE 301 SAW (Single) CWE 302 - CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A-514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3

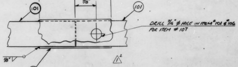
LIST OF MATERIALS

	ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS
△1 3	101	FRAME	15'-6"	STEEL	A.B.S. - GR "A"	1" DIA ROUND BAR	SEE GEN NOTE # 4
△1 3	102	SOCKET - STANCHION	3	STEEL	ASTM-A-53-TYE	1 1/4" SCH 80 PIPE LG = 3"	SEE GEN NOTE # 4
	103	DETENT PIN	3	CRES	COM'L	3/8" DIA., 2" GRIP, WITH LANYARD	STD. 231-00-1
	104	SHELTER	1	CANVAS	↓	Nº 6 CANVAS W/ WINDOW	GEN. NOTE # 3 (ORDERED ON REF. # 2)
△1 3	105	STOP	3	STEEL	ABS - GR "A"	1/4" DIA ROD · 1 3/8" LG	SEE GEN NOTE # 4
△1 3	106	SOCKET - FRAME	2	STEEL	ASTM-A-53-TYE	1" SCH 40 PIPE LG = 3"	SEE GEN NOTE # 4
△1 3	107	DETENT PIN	2	CRES	COM'L	3/8" DIA. 1 1/2" GRIP, WITH LANYARD	STD 231-00-1

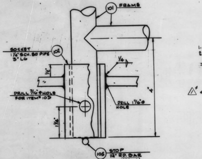
GENERAL NOTES

1. ALL WELDING TO BE IN ACCORD W/AB
2. ALL GALV. PC'S. DAMAGED BY WELD IN ACCORD W/REF. #4
3. SHELTER TO BE CONSTRUCTED OF #6 CANVAS. FITTED WITH A TRANSPARENT VINYL PLASTIC 14"x96"x 20 MIL. THICKNESS, AS MFGR BY RO CHEM. INC. FORMULA 3C OR EQUAL, AND GR COMPLETED ASSEMBLY TO BE LASHED WITH NYLON ROPE SUPPLIED BY VENDOR.

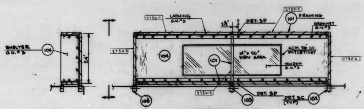
△1 4 4. GALVANIZE AFTER FABRICATION.


3"
1 1/2"
1 1/2"
7/8"
101
101
DRILL 7/16" ϕ HOLE IN ITEM # 101 & # 106 FOR ITEM # 107
1/8"
106
△1 2

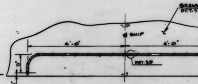
DETAIL 3D
FRAME CONNECT.
FULL SIZE


101 FRAME
SOCKET 1 1/4" SCH. 80 PIPE 3" LG
102
1/2"
1/4
4"
DRILL 7/16" ϕ HOLE FOR ITEM # 103
DRILL 1 1/16" ϕ HOLE
1 1/4"
105 STOP 1/4" RD. BAR
2750-4

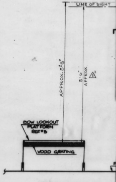
DETAIL 3C
SOCKET
FULL SIZE


SHELTER G.N. # 3
104
24"
2750-1
LASHING G.N. # 3
2 1/2"
DET. 3D
2750-2
101 FRAMING
GROMMET G.N. # 3
2750-3
104
14" x 96" VIEW AREA
101
HEM TO BE WATERTIGHT
WINDOW G.N. # 3
2750-3
2750-3
105
103
DET. 3D
DET 3C (TYP)
102

SECTION 3B
SCALE: 1" = 1'-0"


BREAST HOOK DET. 9E, REF. # 6
℄ SHIP
4'-0"
4'-0"
9"
DET. 3D
3
B
2 1/2"
R

PLAN VIEW 3A
BOW LOOKOUT SHELTER
SCALE: 1" = 1'-0"


LINE OF SIGHT
APPROX. 5'-8"
5'-6" APPROX.
△1 1
BOW LOOKOUT PLATFORM REF # 5
WOOD GRATING

DETAIL 2-A
SCALE 1" = 1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-222-00-03

Sep 1980

8X

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Sep 1980 8X

BUILDERS PLAN NO. H-4650-222-00-04

FRAME 1 OF 2

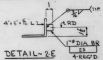
3 2

LIST OF MATERIAL — QUANTITIES ARE FOR ONE SHIP

M	NAME	QTY	MAT'L	SPECS	DESCRIPTION	REMARKS	WT	SOURCE
1	HEX HD BOLT	4	CRES	CL-304	1/2-13 UNC-2A LG = 2"			500110-WC
2	HEX NUT (SELF-LOCKING)	6	↓	MIL-N-25027	1/2-13 UNC-3B, 21 NU-083	FOR Pc N° 101		↓
3	WASHER, FLAT	8	BRASS	FF-W-92, TY-A	1/2" NOM I.D	↓ ↓ ↓		
4	RAISED DECK SOCKET w/ DRAIN	2	CAST STEEL	COMM'L	CASTING SEE DET "6-C" REF 4	WILEY MFG CO-TYPE 6851-C OR EQ		500083-E
5								
6	GUARD RAIL STANCHION	2		ASTM A-53, TY-E	1 1/2" SCH 80 PIPE LG = 3'-4 1/8"	DET. "7-C" REF 4 & G.N. #5		500104-AX-1X
7	↓ ↓ ↓	2		↓ ↓	↓ ↓ ↓ LG = 13 4/8"	DET. "7-C" REF 4 & G.N. #5		↓
8								
9								
0	SAFETY SNAP HOOK	2	GALV ST'L	COMM'L	WIL-CRIT CAT N° 505 FIG 3369 - PG 130			500116-F
1	ANCHOR SHACKLE (SCREW PIN)	2	↓	↓	WIL-CRIT CAT N° 505 FIG 294 SIZE 1/4" OR EQ. - PG. 134			↓
2	GUARD CHAIN	14 LIN FT.	↓	↓	1/4" NOM. TRADE COIL PROOF CHAIN	AMERICAN CHAIN CO		508462
3	CHAIN STOWAGE RACK	1	STEEL	ABS - GR A	(4) 1/2" DIA RD BARS LG = 8"	SEE DET "7-B" REF 4		UAO
4	HOOK (STOWAGE)	2	STEEL	ABS - GR A	1/4" DIA RD BAR	SEE DET "2-F"		↓
5	STUD (NELSON)	8	CRES	COMM'L	3/8-16 UNC-2A LG = 1 1/8" BW	CL-304, TY CFL		500110-XC
6	HEX NUT (SELF LOCKING)	8	↓	COMM'L	3/8-16 UNC-3B	FOR Pc N° 115		500110-WC
7	GRATING	1	ALUM	WASHINGTON ALUM. CO. TYPE NQA #50, STYLE B	1 1/2" ALUM. GRTG	SEE DET. 2-B } ORDER 2'6" x 4'0" PC. CUT PC. NOS 117 & 118		500100-G
8	GRATING	1	ALUM		1 1/2" ALUM. GRTG	SEE DET. 2-C		↓
9	PLATFORM SLAT	54'-0"	OAK		1 1/8" x 2 5/8" FINISHED SIZE			UAO
0	PLATFORM CROSS SUPPORT	7'-6"	OAK		2 5/8" x 2 5/8"			↓
1	SCREW	54	BRASS		#10 FH WOOD SCREW x 1 1/2" LG.			500110-WC

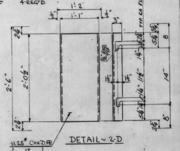
GENERAL NOTES

1. PLATFORM IS HINGED AS SHOWN TO PROVIDE CLEARANCE FOR LINE PASSING THROUGH BOW CHOCK.
2. TIGHTEN BOLTS & NUTS SUFFICIENTLY TO ALLOW PLATFORM TO PIVOT.
3. ALL WELDING SHALL BE IN ACCORDANCE WITH REF. #6.
4. FOR GENERAL NOTES FOR STRUCTURAL PLANS SEE REF N° 1.
5. PLATFORM ASSEMBLY & STANCHIONS SHALL BE GALVANIZED AFTER FABRICATION.
6. GALVANIZED SURFACES TO BE WELDED SHALL BE TREATED IN ACCORDANCE WITH REF N° 7
7. ALL STEEL TO BE MA STEEL, UNLESS NOTED OTHERWISE.



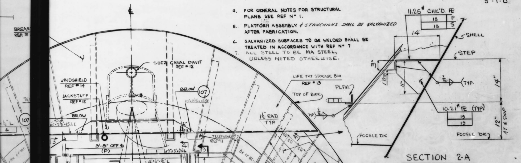
4"x3"x5/16" L 2
3/16 TYP.
RD
1" DIA BR
23
4-REQ'D.

DETAIL ~ 2-E
3" = 1'-0"



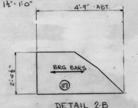
1'-2"
1'-1"
3"
TYP EA FLG.
2'-6"
2'-0 1/2"
14"
8"
11.25# CHK'D PL
17

DETAIL ~ 2-D



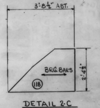
11.25# CHK'D PL
18 P
18 S
14"
SHELL
STEP
3"
11"
14"
12" AT ¢ SHIP
2'-6"
3/16 TYP.
10.21# PL (TYP)
19
19
FOCSLE DK
LIFE JKT. STOWAGE BOX REF #13
TOP OF BWK.
PLFM.
1 1/2" RAD TYP
FOCSLE DK
SUEZ CANAL DAVIT REF #12
WINDSHIELD REF #14
JACKSTAFF REF #12
BELOW
107
TELEPHONE REF #11
21'-8" OFF ¢ (P)
WOOD GRATING
ALUM. GRTG (117) DET 2B

SECTION 2-A
1 1/2" = 1'-0"



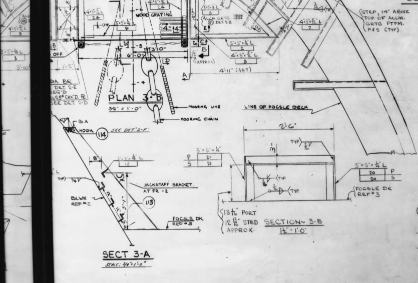
4'-9" ABT.
2'-4 1/2"
BRG. BARS
117

DETAIL 2-B
3/4" = 1'-0"



3'-8 1/2" ABT.
2'-4 1/2"
BRG BARS
118

DETAIL 2-C
3/4" = 1'-0"



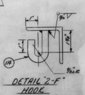
STEP, 14" ABOVE TOP OF ALUM. GRTG PTFM. P&S (TYP)
4'-11" (ABT)
6'-0"
3'-0"
(APPROX)
DIA. BR
DET 2-E
REQ'D
11.25# CHK'D PL
SEE DET. 2-D
MOORING LINE
MOORING CHAIN
LINE OF FOCSLE DECK
B.A.
HOOK 114 SEE DET "2-F"
JACKSTAFF BRACKET AT FR -2
BLWK REF #2
113
FOCSLE DK. REF #3
2'-6"
3"x3"x1/4" L
P 21
S 21
20 P
20 S
FOCSLE DK REF #3
3/16 TYP

PLAN 3-B
3/4" = 1'-0"

SECT 3-A
SCALE: 3/4" = 1'-0"

13 3/16" PORT
12 13/16" STBD
APPROX.

SECTION ~ 3-B
1 1/2" = 1'-0"



1"
3/16
1 3/4"
114
9/32 R

DETAIL "2-F"
HOOK
SCALE: 6" = 1'-0"

UAO-50447-A

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	1/30/78	4 4	1. SECT. 4-D HEIGHT OF PLATFORM REVISED TO SUIT SECT 2A & 4-C 2. SECT 4-D CHAMFER OF WOOD GRATING REVISED FROM 1/2" TO 1/4" ABV. PER GGS LTR 1-11-78 FILE 5587/512	JNS	

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 222

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED
DATE 15 December 1977
DRAWN CB/JWB & RHM
IN CHARGE: L. THADEN
CHECKED: LHT
EXAMINED: T. L. Mullin
REVIEW:
APPROVED

PLAN NO. H-4650-222-00-04
ALT. NO. 1²

BOW LOOKOUT
PLATFORM

APPROVAL LETTERS

HULL 4650-1					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-11-78				
A.B.S.	╳				
U.S.C.G.	NR	N.R. 3-3-78	N.R. 2-9-78		
LLOYD'S R.S.	╳				
U.S.P.H.S.	1-5-78				

NO.	PLAN NO.	TITLE
14	H-4650-222-00-03	BOW LOOKOUT WINDSHIELD
13	H4650-232-00-37	LIST OF SAFETY DEVICES
12	H-4650-211-00-05	JACK STAFF & SUEZ CANAL DAVIT
11	H4650-202-15-71	C&CD S.P. TELEPHONES CKT. 1JV, 2JV, & 6JV.
10	H-4650-111-10-30	GEN. ARRG'T - FOCSLE DK.
9		
8	H-4650-231-00-03	GUARD RAILS AROUND HATCH FWD. FR. 157
7	H-4650-161-00-01	PAINTING & CEMENTING
6	STD. 129-00-02	WELDING DETAILS
5	H-4650-231-00-01	RAILS & STAN. ARRG'T FOCSLE DK & ABOVE
4	H-4650-231-00-04	GUARD RAILS AROUND HATCHES AFT FR 157
3	H-4650-129-02-29	FOCSLE DK. PLTG & GIRDERS.
2	H-4650-129-05-01	SHELL EXPANSION FR 11 1/2 FWD.
1	STD. 129-00-01	GEN. NOTES FOR STRUCT. PLANS

REFERENCE PLANS

UNIT N° 2640	
DATE	MK. No.
2-28-78	1 To 24

		DATE OF ISSUE					
	ALTERATION	—	—	1²	1²	1²	1²
	ENGINEERING DISTRIBUTION	12/16/77	12/21/77	2/3/78	2/3/78	2/28/78	3/21/78
MAIL	OWNERS	4		2			
	AMERICAN BUREAU						
	LLOYD'S R.S.						
	U.S.M.A.						
	U.S. NAVY						
	U.S.C.G.	3		3			
	JOINER CONT'R.						
	USPH	3		3			
INSPECTION	OWNER'S INSP.	1		1			1
	AM. BU. INSP.						
	LLOYD'S INSP.						
	U.S.M.A. INSP.			1			1
	U.S. NAVY INSP.						
	U.S.C.G. INSP.						1
	CO SCHAUB						1
OFFICE	HULL DRAFT.-21		1P		1P	1P	1
	MACH. DRAFT.-22		2P		2P		2
	ELEC. DRAFT.-23		1P		1P		1
	OUTFIT. DRAFT.-25						
	ESTIMATING						
	21-1 D WAWOOD		1P		1P		1
MISC.	PRODUCTION (BCD)						
	ORDER DEPT.						
	JOINER CONT. YARD						
	TOTAL ENG'R. DIST.	11	5	10	5	1P	9
	YARD DISTRIBUTION	12/16/77	12/29/77	/	8	3/1/78	3/21/78
YARD	UAO					1	1
	PMcNAIR	2P			1P	1	1
	PIECE RATE-11		1P		1P	1	1
	TEST DEPARTMENT						
	Q-MAT'L					1	1
	PLANNING		1P		1P	1	1
STRUCTURAL	GROUND ASSEMBLY					2	2
	35 DEPT					2	2
	H. LEVY					1	1
	Q-ASSURANCE					1	1
	NO. WAY						
	NO. WAY						
	NO. WAY						
	NO. WAY						
	STRUCT. SUPER.					2	2
	OPTICAL DETAIL-48		2P		2P	2	2
	WET DOCK						
MACH'Y & OUTFIT.	PIPE SHOP-52						
	OUTFIT. #1 PIER					1	1
	PIPE DRAFT.-52					2	2
	BOILER SHOP-58					1	1
	OUTSIDE MACH.-60					1	1
	RIGGING					1	1
	ELECTRIC SHOP-70						
	SHEET MET. SHOP-74						
	COPPER SHOP-51						
	PAINT SHOP-75					1	1
OTHER	WELDING						
	CARPENTER SHOP					1	1
	MOLD LOFT-41					1	1
	BRACKET SHOP						
	SHIP SUPT					1	1
	TOTAL YARD DIST.	2	4P	/	15	25	25

H-474

12.8 SQ. FT.

3 2 1

BOW LOOKOUT PLATFORM

49957 (Rev.A 11-79) WELDING 11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING

THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
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7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860-0 Flux)		CWE 301 SAW (Single) CWE 302 – CWE 303 SAW (Multiple)
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STEEL CODE

- I MATERIAL DESIGNATION, MA MB
- II MATERIAL DESIGNATION, AH DH EH
- III MATERIAL DESIGNATION, A-514
- IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

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MB	Mild Steel Plates and Shapes ABS Grade "B"
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NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

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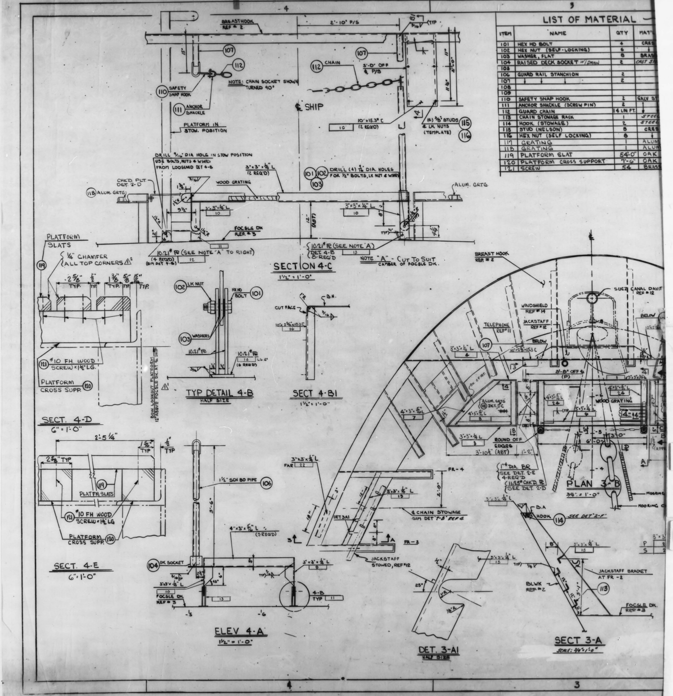
All Butt Welds High Strength to High Strength use 8018C3


4
3
BREASTHOOK REF # 2
2'-10" P/S
107
112
110 SAFETY SNAP HOOK
111 ANCHOR SHACKLE
NOTE: CHAIN SOCKET SHOWN TURNED 90°
112 CHAIN
3'-0" OFF ℄ P/S
℄ SHIP
PLATFORM IN STOW. POSITION
10" x 15.3# ⊏ (2 REQ'D)
(4) 3/8" STUDS & LK NUTS (TEMPLATE)
115
116
DRILL 9/16" DIA HOLE IN STOW POSITION USE BOLTS, NUTS & WSHRS FROM LOOSEND DET 4-B
3" x 3" x 1/4" L (2 REQ'D)
101 102 103 DRILL (4) 9/16" DIA. HOLES FOR 1/2" BOLTS, LK NUT & WSHRS
CHK'D. PLT. DET. 2-D
118 ALUM. GRTG
WOOD GRATING
ALUM. GRTG
FOCSLE DK REF # 3
10.21# ℙ (SEE NOTE "A" TO RIGHT) (4 REQ'D) (SIM DET 4-B)
10.21# ℙ (SEE NOTE "A") DET. 4-B 2-REQ'D
NOTE "A" - CUT TO SUIT CAMBER OF FOCSLE DK.
SECTION 4-C
1 1/2" = 1'-0"
PLATFORM SLATS
119
1/4" CHAMFER (ALL TOP CORNERS)
2 5/8" TYP.
121 #10 FH. WOOD SCREW x 1 1/2" LG.
PLATFORM CROSS SUPP. 120
102 LK NUT
HX HD BOLT 101
103 WASHERS
10.21# ℙ
10.21# ℙ 14 LG. 4" (6 REQ'D)
TYP DETAIL 4-B
HALF SIZE
CUT FACE
B.H.
SECT 4-B1
1 1/2" = 1'-0"
BOW LOOKOUT PLATFORM 12' ABOVE FOCSLE DK. AT ℄ SHIP
SECT. 4-D
6" = 1'-0"
2'-5 1/4"
2 5/8" TYP
119 PLATFM SLATS
121 #10 FH WOOD SCREW x 1 1/2" LG
PLATFORM CROSS SUPP. 120
SECT. 4-E
6" = 1'-0"
1 1/2" SCH 80 PIPE
106
3'-6"
4" x 3" x 5/16" L (2-REQ'D)
104 DK SOCKET
3" x 3" x 1/4" L
FOCSLE DK. REF # 3
4-B TYP
ELEV 4-A
1 1/2" = 1'-0"
3" x 3" x 1/4" L
FR-4
2'-0"
℄ CHAIN STOWAGE SIM DET 7-B REF 4
DET 3-A1
JACKSTAFF STOWED, REF #12
FR-3
DET. 3-A1
HALF SIZE
BREAST HOOK REF # 2
SUEZ CANAL DAVIT REF # 12
WINDSHIELD REF # 14
JACKSTAFF REF # 12
TELEPHONE REF # 11
BELOW
3'-8" OFF ℄ (P)
ALUM. GRTG 118 DET. 5-C
WOOD GRATING
ROUND OFF EDGES
3'-10 1/2" (ABT)
1" DIA. BR SEE DET. 2-E 4-REQ'D
11.5# CHK'D. ℙ SEE DET. 2-D
PLAN 3-B
3/4" = 1'-0"
MOORING
HOOK 114 SEE DET "2-F"
JACKSTAFF BRACKET AT FR - 2
BLWK REF # 2
113
FOCSLE DK. REF # 3
SECT 3-A
SCALE: 3/4" = 1'-0"
4
3

LIST OF MATERIAL

ITEM	NAME	QTY	MAT'L
101	HEX HD BOLT	4	CRES
102	HEX NUT (SELF-LOCKING)	6	↓
103	WASHER, FLAT	8	BRAS
104	RAISED DECK SOCKET W/DRAIN	2	CAST STE
105			
106	GUARD RAIL STANCHION	2	
107	↓ ↓ ↓	2	
108			
109			
110	SAFETY SNAP HOOK	2	GALV ST
111	ANCHOR SHACKLE (SCREW PIN)	2	↓
112	GUARD CHAIN	14 LIN FT.	↓
113	CHAIN STOWAGE RACK	1	STEE
114	HOOK (STOWAGE)	2	STEE
115	STUD (NELSON)	8	CRES
116	HEX NUT (SELF LOCKING)	8	↓
117	GRATING	1	ALUM
118	GRATING	1	ALUM
119	PLATFORM SLAT	54'-0"	OAK
120	PLATFORM CROSS SUPPORT	7'-6"	OAK
121	SCREW	54	BRASS

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE, SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-222-00-04

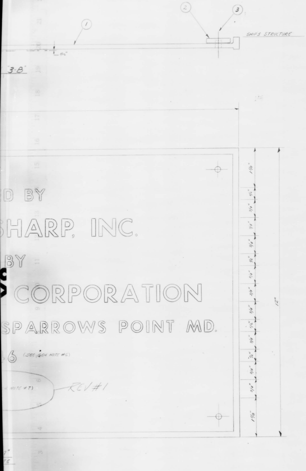
Sep 1980

8X

FRAME 2 OF 2

BILL OF MATERIAL (PER SHIP)

REV	ITEM	QUAN	DESCRIPTION	MATERIAL	MATERIAL SPEC	PATTERN	REMARKS	DET NO	REQ'N NO
	1	1	BUILDER DATA PLAQUE	CAST BRONZE	COM'L		SEE DET "3-A"		
	2	4	PAD	STEEL	A.B.S.-GR"A"		1"×1"×3/16" FB		
	3	4	CAP SCREW, HEX HD	BRONZE	COM'L		1/4"-20 UNC-3A, LG 3/8"		
	4								
	5								



GENERAL NOTES

1. PLAQUE SHALL BE OF CAST BRONZE AND OF GENERAL DESIGN AS SHOWN ON THIS DRAWING.
2. THICKNESS OF PLAQUE SHALL BE 3/16" + 1/16" FOR THE RAISED FIGURES, LETTERS AND BORDERS.
3. PLAQUE BORDERS, LETTERS AND FIGURES SHALL BE POLISHED, LEAVING THE REMAINDER OF THE FACE OF THE PLAQUE WITH A ROUGHENED OR STIPPLED FINISH. AFTER BUFFING, THE ENTIRE SURFACE SHALL BE LACQUERED.
4. THE HEIGHTS, PROPORTIONS, SPACING AND WIDTH OF STROKES OF LETTERS SHALL BE APPROXIMATELY AS SHOWN; HOWEVER, SOME VARIATION MAY BE FOUND NECESSARY.
5. EACH LINE OF LETTERS SHALL BE CENTERED ON PLAQUE EXCEPT AS NOTED.
6. HULL NO DESIGNATIONS ARE AS FOLLOWS:
   HULL NO 4650
   HULL NO 4651
7. YEAR NO DESIGNATION ARE AS FOLLOWS:
   HULL NO 4650 - 19 - -
   HULL NO 4651 - 19 - - } RES NO 1
8. TYPE OF LETTERING TO BE TYPE 1 FUTURA DEMIBOLD (PER INGALLS STD PLAN 528-501 ENTITLED "STANDARD LETTERING")

RESERVATIONS

1. YEAR NUMBER

NO.	PLAN NO.	TITLE

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D

HULL	DESIGN	CHARGE
4651		4651
4650		4650

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN
DRAWN J. LOPEZ
CHECKED L.H.T.
REVIEW [illegible]
DATE 10 AUGUST 1978
INCHARGE: L. THADEN
EXAMINED: T.L. Mullin
APPROVED: [illegible]

PLAN NO. H-4650-232-00-53
ALT. NO. 0

BUILDER'S NAME PLATE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-21-78				
A.B.S.	X				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

		DATE OF ISSUE	
	ALTERATION	-	-
	ENGINEERING DISTRIBUTION	8-10-8	9-[illegible]-8
MAIL	OWNERS	4	
MAIL	AMERICAN BUREAU		
MAIL	LLOYD'S R.S.		
MAIL	U.S.M.A.		
MAIL	U.S. NAVY		
MAIL	U.S.C.G.		
MAIL	JOINER CONT'R.		
INSPECTION	OWNER'S INSP.	1	1
INSPECTION	AM. BU. INSP.		
INSPECTION	LLOYD'S INSP.		
INSPECTION	U.S.M.A. INSP.		1
INSPECTION	U.S. NAVY INSP.		
INSPECTION	U.S.C.G. INSP.		
INSPECTION	COSCHAUB		1
OFFICE	HULL DRAFT. - 21	1P	1
OFFICE	MACH. DRAFT. - 22	2P	2
OFFICE	ELEC. DRAFT. - 23	1P	1
OFFICE	OUTFIT. DRAFT. - 25		
OFFICE	ESTIMATING		
OFFICE	21-1 D WAWOOD	1P	1
MISC.	PRODUCTION (BCD)		
MISC.	ORDER DEPT.		
MISC.	JOINER CONT. YARD		
	TOTAL ENG'R. DIST.	10	8
	YARD DISTRIBUTION	8-10-8	9-29-8
YARD	SPM		
YARD	P McNAIR	2P	1
YARD	PIECE RATE - 11	1P	1
YARD	TEST DEPARTMENT		
YARD	SHIP SUPT		1
YARD	PLANNING	1P	1
STRUCTURAL	GROUND ASSEMBLY		4
STRUCTURAL	PIER #1		1
STRUCTURAL	35 DEPT		2
STRUCTURAL	H. LEVY		1
STRUCTURAL	NO. WAY UAO		1
STRUCTURAL	NO. WAY		
STRUCTURAL	NO. WAY		
STRUCTURAL	NO. WAY		
STRUCTURAL	STRUCT. SUPER.		2
STRUCTURAL	OPTICAL DETAIL - 45	1P	2
STRUCTURAL	WET DOCK		
MACH'Y & OUTFIT.	PIPE SHOP - 52		
MACH'Y & OUTFIT.	OUTFIT. #1 PIER		
MACH'Y & OUTFIT.	PIPE DRAFT. - 52		2
MACH'Y & OUTFIT.	BOILER SHOP - 58		2
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60		2
MACH'Y & OUTFIT.	Q ASSURANCE		1
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70		2
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74		
MACH'Y & OUTFIT.	COPPER SHOP - 81		
MACH'Y & OUTFIT.	PAINT SHOP - 78		1
OTHER	WELDING		
OTHER			
OTHER	MOLD LOFT - 41		1
OTHER	BRACKET SHOP		
OTHER	@ MACH. SHOP		1
	TOTAL YARD DIST.	5	29

H-525

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-232-00-53

Oct 1980

FRAME 1 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

BUILDERS PLAN NO. H-4650-232-00-53

FRAME 2 OF 3

11/14/78

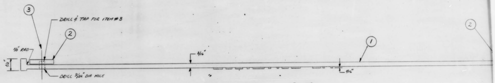
the Following Table:

USE FILLER METAL
1, 2, 3, 4, 6, 8
2, 4, 6, 8
2, 4, 6, 8
*2, 4, 5, 7, 8, 9
10
2
11

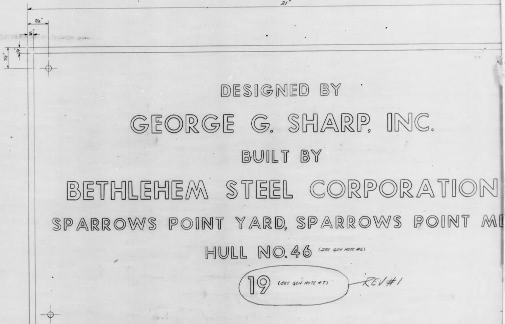
PROCEDURE NO.
CWE 101 SMAW
CWE 101 SMAW
CWE 101 SMAW
CWE 105 SMAW (Gravity)
CWE 101 SMAW
CWE 105 SMAW (Gravity)
CWE 101 SMAW
CWE 209 FCAW (Fluxcore C-25)
CWE 209 FCAW
CWE 301 SAW (Single)
CWE 302 - CWE 303 SAW (Multiple)
CWE 207 FCAW (Fluxcore CO_2)
CWE 108 SMAW (Fillet Welds 9018M)
(Butt Welds 11018M)
CWE 110 SMAW

DESCRIPTION
DESCRIPTION
Grade "AH"
Grade "DH"
Grade "EH"
and EH36 Quality Steels

REV	ITEM	QUAN	
	1	1	BUI
	2	4	PA
	3	4	CHA
	4		
	5		


3
DRILL & TAP FOR ITEM #3
2
1/16" RAD
1/2"
DRILL 9/32" DIA HOLE
3/16"
1
1/16"
2

PLAN VIEW "3-B"
FULL SIZE


21"
7/8"
1/4"
7/8"
1/4"
DESIGNED BY
GEORGE G. SHARP, INC.
BUILT BY
BETHLEHEM STEEL CORPORATION
SPARROWS POINT YARD, SPARROWS POINT MD
HULL NO. 46 (SEE GEN NOTE #6)
19 (SEE GEN NOTE #7)
REV #1

DETAIL "3-A"
BUILDER'S NAME PLATE
FULL SIZE

WELDING 11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C-25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860-0 Flux)		CWE 301 SAW (Single) CWE 302 - CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS. A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS. A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

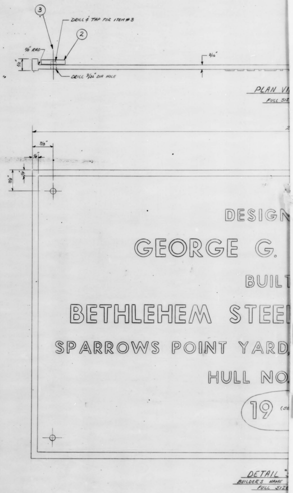
I	MATERIAL DESIGNATION, MA MB
II	MATERIAL DESIGNATION, AH, DH EH
III	MATERIAL DESIGNATION, A-514
IV	MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3


3
DRILL & TAP FOR ITEM #3
2
1/8" RAD
1/2"
3/16"
DRILL 9/32" DIA HOLE
PLAN VI
FULL SIZ
7/8"
1/4"
1/4"
7/8"
DESIGN
GEORGE G.
BUILT
BETHLEHEM STEE
SPARROWS POINT YARD,
HULL NO.
19 (SE
DETAIL "
BUILDER'S NAME
FULL SIZE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-232-00-53

Oct 1980

FRAME 3 OF 3

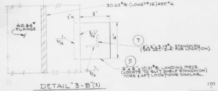
8X

BILL OF MATERIAL (PER SHIP)

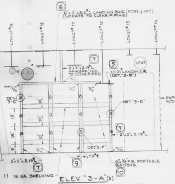
REV.	ITEM No	No REQ'D	DESCRIPTION	MATERIAL	MAT'L. SPECS.	PATTERN	REMARKS	DET. No	REQN. No
	1	1	STORAGE CABINET (36"W x 24"D x 42"H)	VARIOUS	COMM.		McMASTER-CARR CAT. #83/PG. 36/FIG. 4588 T22.	2-A	22-505385-B
	2	1	8" GRINDER (ONE MED. GRIT ALUM. OXIDE WHEEL & ONE. WIRE BUFFING WHEEL - ADJUSTABLE TOOL REST - SHATTERPROOF GLASS SHIELDS)				SIMILAR TO HISEY-WOLF CHA / 3/4 HP / 3450 RPM / 440V. 3-PHASE, 60 HZ MOTOR.	2-A	22-500015-B
	3	1	6" VISE (MACHINIST'S BENCH VISE WITH REMOVABLE ADJUSTABLE JAWS & SWIVEL BASE.				McMASTER-CARR CAT. #83/PG. 1282 / FIG. 5288 D3.	2-A	22-500128-CE
	4	1	TOOL STORAGE BOARD.				24" x 48" x 1/4" THK. TEMPERED MASONITE PEGBOARD McMASTER-CARR CAT. #83/PG. 1483D/FIG. 9308Y23.	2-A	22-505386-B
	5	4	LANDING PLATE.	MILD STEEL	ABS GR."A"		6" x 6" x 10.21# PL. EA.	3-B	
	6	2	LANDING BAR.				C6 x 8.2# C x 20 FT. LG. EA. (TO CUT).	3-A 4-A	
	7	5	STANCHION, SHELF SUPPORTS & HANGERS.				2" x 2" x 3.19# L x 20 FT. LG. EA. (TO CUT).	VARIOUS	
	8	1	PORTABLE BATTEN SUPPORTS.				2 1/2" x 1 1/2" x 3.19# L x 10 FT. LG. (TO CUT).	5-E 5-F	
	9	3	INTERMEDIATE STANCHIONS.				WT 4" x 7.5# T x 20 FT. LG. EA. (TO CUT).	3-A 4-A	
	10	7	PORTABLE & FIXED BATTENS.				2" x 1/4" F.B. x 20 FT. LG. EA. (TO CUT).	VARIOUS	
	11	7	SHELVING (16 GA. SHEET METAL)	STEEL GALV.	ASTM A-525		48" x 120" EA. (TO CUT).	VARIOUS	

ALTERATIONS

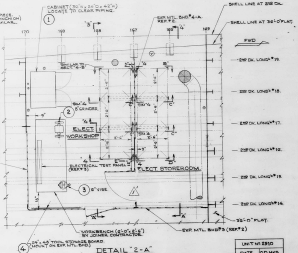
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	6/11/79	2	1. REVISED DOOR SWING FROM ELEC STRM TO WORKSHOP IN ORDER TO CLEAR VENT DUCT - DET "2-A" • ABV ITEM REQUESTED BY 22 DEPT	J.H.C.	JLM


30.63# E (LONG'L #16) REF. #4
40.84# FLANGE
1"
5"
3/16
6"
⑦ 2" x 2" x 3.19# L STANCHION (SEE DET. 2-A FOR LOCATION).
⑤ 6" x 6" 10.21# PL. LANDING PIECE. (LOCATE TO SUIT SHELF STANCHION) FORE & AFT LOCATIONS SIMILAR.

DETAIL "3-B" (3)
SHOWING ARRG'T OF LANDING PLATE
FOR SHELF CORNER STANCHION
3" = 1'-0"


⑥ C6 x 8.2# C LANDING BAR (FORE & AFT) (LOCATE TO CLEAR PIPING)
LONG'L #19
LONG'L #18
LONG'L #17
LONG'L #16
LONG'L #15
LONG'L #14
⑦ 2" x 2" x 3.19# L HANGERS (LOC. TO CLEAR PIPES)
⑤ 10.21 LANDING PL. (DET. "3-B")
VENT
EXP. MTL. BHD #3 W/DOOR (REF #2)
DET. "3-E"
DET. "5-F"
⑦ 2" x 2" x 3.19# L
4" x 4" x 7.5# T ⑨
2" x 1/4" F.B. PORTABLE BATTENS ⑩
2" x 2" x 3.19# L ⑦
11 16 GA. SHELVING

ELEV. "3-A" (2)
ELEV. OF SHELVING IN ELECTRICAL WORKSHOP
PORT SIDE - LOOKING FWD.
1/2" = 1'-0"


① CABINET (36"W x 24"D x 42"H) LOCATE TO CLEAR PIPING.
EXP. MTL. BHD. #4-A. REF. #2.
SHELL LINE AT 2ND DK.
SHELL LINE AT 36'-0" FLAT.
170
169
168
167
166
165
"3"
"4"
FWD
2ND DK. LONG'L #19.
2ND DK. LONG'L #18.
2ND DK. LONG'L #17.
2ND DK. LONG'L #16.
2ND DK. LONG'L #15.
2ND DK. LONG'L #14.
36'-0" FLAT.
SIMILAR TO SECT. "4-B"
② 8" GRINDER.
ELECT. WORKSHOP
ELECT. STOREROOM.
SIM "4"
2'-6"
9"
18"
ELECTRICAL TEST PANEL (REF #3)
EXP. MTL. BHD. #4 (REF #2)
③ 6" VISE.
"A"
"B"
"C"
"D"
"E"
1
WORKBENCH (6'-0" x 2'-6") BY JOINER CONTRACTOR.
④ 24" x 48" TOOL STOWAGE BOARD. (MOUNT ON EXP. MTL. BHD.)
EXP. MTL. BHD #3 (REF #2)

DETAIL "2-A"
PLAN SHOWING ARRG'T OF ELECTRICAL WORKSHOP
& STOREROOM ON 36FT. FLAT IN
ENGINE RM. - PORT SIDE
1/2" = 1'-0"

UNIT No 2510	
DATE	O.D. MKS
11/27/78	

• GENERAL NOTES •

1. ALL MAT'L., OTHER THAN SHELVING, SHALL BE MILD STEEL (MA) CONFORMING TO ABS GR. "A" (NOT INCLUDING ITEMS 1 TO 4)
2. ALL WELDING TO BE IN ACCORDANCE WITH ABS RULES AND REF. No 1.
3. ALL SHELVING TO BE 16 GA., HOT DIPPED GALV. METAL, WITH 4" HIGH FLANGES ALL AROUND, WITH 1" HEM.
4. ALL BATTENS, FIXED & PORTABLE, TO BE FABRICATED OF 2" x 1/4" F.B. PORTABLE BATTENS SHALL BE FITTED ON FRONT OF SHELVING.
5. ALL SHELVING AND BATTENS TO BE PARALLEL TO B.L.
6. SMOOTH AND ROUND OFF ALL BURRS AND ROUGH EDGES.
7. DAMAGED GALVANIZED AREAS AT FINAL ASSEMBY, SHALL BE THOROUGHLY CLEANED AND COATED WITH SUITABLE ANTI-CORROSIVE COLD GALVANIZING COATING.

UAO-50152

REFERENCE PLANS

NO.	PLAN NO.	TITLE
4.	H4650-129-02-59	2ND DK. FRG. & GIRDERS AFT OF FR. 153 1/2. SHT 3 OF 3
3.	E4650-202-20-03	L.O.E. MACHY. SPACE / 36'-0" LEVEL
2.	H4650-177-00-01	EXPANDED MTL. BHDS. & DETAILS.
1.	STD. 129-00-02	WELDING STANDARD.

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 232

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN
DATE 22 SEPTEMBER 1978
DRAWN J. SOLLERS
IN CHARGE L. THADEN
CHECKED L.H.T.
EXAMINED J. L. Mullin
REVIEWED
APPROVED

PLAN NO. H-4650-232-00-54
ALT. NO. 1

ARRG'T & DETS. OF ELECTRICAL WORKSHOP & STOREROOM FRS. 165 TO 170 (PORT ONLY)

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	10-16-78				
A.B.S.	╳				
U.S.C.G.	╳				
LLOYD'S R.S.	╳				
U.S.P.H.S.	11-13-78				

		DATE OF ISSUE				
	ALTERATION	–	–	–	–	1
	ENGINEERING DISTRIBUTION	9/25/78	9/28/78	10/25/78	11/28/78	6/11/79
MAIL	OWNERS	4				2
MAIL	AMERICAN BUREAU					
MAIL	LLOYD'S R.S.					
MAIL	U.S.M.A.					
MAIL	U.S. NAVY					
MAIL	U.S.C.G.					
MAIL	JOINER CONT'R.					
MAIL	USPH			3		3
INSPECTION	OWNER'S INSP.	1		1	1	
INSPECTION	AM. BU. INSP.					
INSPECTION	LLOYD'S INSP.					
INSPECTION	U.S.M.A. INSP.			1	1	
INSPECTION	U.S. NAVY INSP.					
INSPECTION	U.S.C.G. INSP.					
INSPECTION	GDSCHAUB			1		1
OFFICE	HULL DRAFT.-21		1P	1	1	1
OFFICE	MACH. DRAFT.-22		3P	2		2
OFFICE	ELEC. DRAFT.-23		1P	1		1
OFFICE	OUTFIT. DRAFT.-25					
OFFICE	ESTIMATING					
OFFICE	21-1D WAWOOD		1P	1		1
MISC.	PRODUCTION (BCD)					
MISC.	ORDER DEPT.					
MISC.	JOINER CONT. YARD					
	TOTAL ENG'R. DIST.	8	5	11	3	11
	YARD DISTRIBUTION	9/25/78	9/28/78	10/ /78	11/29/78	6/12/79
YARD	[redacted] UAO-OFFICE			1	1	1
YARD	P McNAIR	2P		1	1	/
YARD	PIECE RATE-11		1P	1	1	1
YARD	TEST DEPARTMENT					
YARD	J. SIMMONS			1	1	1
YARD	[redacted] PLANNING		1P	1	1	1
STRUCTURAL	GROUND ASSEMBLY			2	2	2
STRUCTURAL	35 DEPT.			2	2	2
STRUCTURAL	H. LEVY			1	1	/
STRUCTURAL	QUALITY ASSURANCE			1	1	/
STRUCTURAL	NO. WAY					
STRUCTURAL	NO. WAY					
STRUCTURAL	NO. WAY					
STRUCTURAL	NO. WAY					
STRUCTURAL	STRUCT. SUPER.			2	2	2
STRUCTURAL	OPTICAL DETAIL-45		2P	2	2	2
STRUCTURAL	WET DOCK					
MACH'Y & OUTFIT.	PIPE SHOP-52					
MACH'Y & OUTFIT.	OUTFIT. #1 PIER			1	1	1
MACH'Y & OUTFIT.	PIPE DRAFT.-62			2	2	2
MACH'Y & OUTFIT.	BOILER SHOP-58			2	2	2
MACH'Y & OUTFIT.	OUTSIDE MACH.-60			2	2	2
MACH'Y & OUTFIT.	Q-MAT'L			1	1	1
MACH'Y & OUTFIT.	ELECTRIC SHOP-70			4	4	4
MACH'Y & OUTFIT.	SHEET MET. SHOP-74					
MACH'Y & OUTFIT.	COPPER SHOP-51					
MACH'Y & OUTFIT.	PAINT SHOP-78			1	1	1
OTHER	WELDING					
OTHER	E BROKUS					1
OTHER	MOLD LOFT-41			1	1	1
OTHER	BRACKET SHOP					
OTHER	R MILLER					1
	TOTAL YARD DIST.	2	4	[illegible]	[illegible]	[illegible]

4650-51-ALT. 0
4650-51-ALT. 0
ALT. 1

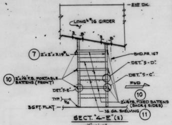
3
2
1
H-526
20 FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

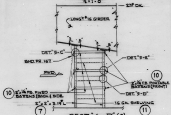
Oct 1980

BUILDERS PLAN NO. H-4650-232-00-54

FRAME 1 OF 3


2ND DK.
LONGL #16 GIRDER
"3-B"
7 2"x2"x3.19#L
BHD. FR. 167
DET. "5-D"
DET. "5-C"
10 2"x1/4" F.B. PORTABLE BATTENS (FRONT)
DET. "5-E"
FWD
TYP. 3/16
36 FT. FLAT
10 2"x1/4" F.B. FIXED BATTENS (BACK & SIDES)
16 GA. SHELVING 11

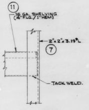
SECT. "4-E" (2)
1/2"=1'-0"


2ND DK.
LONGL #16 GIRDER
"3-B"
DET. "5-C"
BHD. FR. 167
FWD.
DET. "5-E"
10 2"x1/4" F.B. PORTABLE BATTENS (FRONT)
10 2"x1/4" F.B. FIXED BATTENS (BACK & SIDE
DET. "5-D"
2"x2"x3.19#L 7
16 GA. SHELVING 11

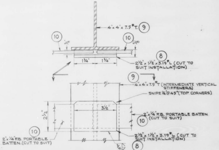
SECT. "4-D" (2)
1/2"=1'-0"

BILL

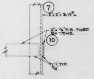
REV.	ITEM NO.	NO. REQ'D	DESCRIPTION	MATERIAL
	1	1	STOWAGE CABINET (36"W x 24"D x 42"H)	VARIOUS
	2	1	8" GRINDER (ONE MED. GRIT ALUM. OXIDE WHEEL & ONE WIRE BUFFING WHEEL - ADJUSTABLE TOOL REST - SHATTERPROOF GLASS SHIELDS	
	3	1	6" VISE (MACHINISTS BENCH VISE WITH REMOVABLE ADJUSTABLE JAWS & SWIVEL BASE.	
	4	1	TOOL STORAGE BOARD.	
	5	4	LANDING PLATE.	MILD STEEL
	6	2	LANDING BAR.	
	7	5	STANCHION, SHELF SUPPORTS & HANGERS.	
	8	1	PORTABLE BATTEN SUPPORTS.	
	9	3	INTERMEDIATE STANCHIONS.	
	10	7	PORTABLE & FIXED BATTENS.	
	11	7	SHELVING (16 GA. SHEET METAL).	STEEL GALV.


11
16 GA. SHELVING (4" FLG./1" HEM)
2"x2"x3.19#L
7
TACK WELD.

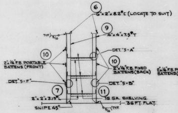
DET. "5-D" (4)
3"=1'-0"


4"x4"x7.5#T. 9
10
10
1 3/4"
1 3/4"
8
2 1/2"x1 1/2"x3.19#L (CUT TO SUIT INSTALLATION)
9
4"x4"x7.5#T (INTERMEDIATE VERTICAL STIFFENERS)
SNIPE 1/4"@45° (TOP CORNERS)
3 1/2"
2 1/2"
2"x1/4" F.B. PORTABLE BATTEN (CUT TO SUIT)
10
10
2"x1/4" F.B. PORTABLE BATTEN. (CUT TO SUIT)
2 1/2"x1 1/2"x3.19#L (CUT TO SUIT INSTALLATION)
3/16
8

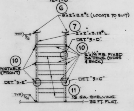
DET. "5-F" (3&4)
DET. OF PORTABLE BATTEN CLIP ON 4"x4"x7.5#T
INTERMEDIATE VERTICAL STIFFENERS
6"=1'-0"


7
2"x2"x3.19#L
2"x1/4" F.B. FIXED BATTENS.
10
3/16
TYP.

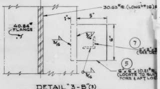
DET. "5-C" (4)
3"=1'-0"


6
6"x2"x8.2#⊏ (LOCATE TO SUIT)
TYP. 3/16
9
4"x4"x7.5#T
DET. "5-A"
10
2"x1/4" F.B. PORTABLE BATTENS (FRONT)
10
2"x1/4" F.B. FIXED BATTENS (BACK)
DET. "5-F"
DET. "5-B"
7
2"x2"x3.19#L
11
16 GA. SHELVING.
36 FT. FLAT.
SNIPE 45°
3/16 TYP.

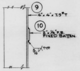
SECT. "4-C" (2)
1/2"=1'-0"


6
6"x2"x8.2#⊏ (LOCATE TO SUIT)
TYP. 3/16
7
2"x2"x3.19#L.
DET. "5-D".
10
2"x1/4" F.B. FIXED BATTENS. (SIDES & BACK)
10
2"x1/4" F.B. PORTABLE BATTENS (FRONT)
DET. "5-E"
DET. "5-C"
11
16 GA. SHELVING.
TYP. 3/16
36 FT. FLAT.

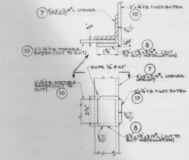
SECT. "4-B" (2)
1/2"=1'-0"


30.63#PL. (LONGL #16)
40.84# FLANGE
1"
5"
6"
3/16
3/16
7
5
3/16
6"x6"x10.21#PL. (LOCATE TO SUIT

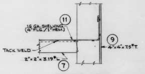
DETAIL "3-B" (3)
SHOWING ARR'GT. OF LANDING PLATE
FOR SHELF CORNER STANCHION
3"=1'-0"


9
4"x4"x7.5#T
10
2"x1/4" F.B. FIXED BATTEN.
3/16 TYP.

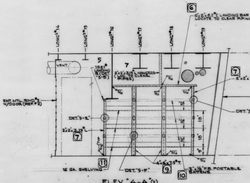
DET. "5-B" (4)
3"=1'-0"

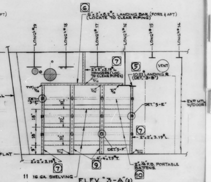

7 2"x2"x3.19#L CORNER UPRIGHT
2"x1/4" F.B. FIXED BATTEN.
10
3/16
10 2"x1/4" F.B. PORTABLE BATTEN. (CUT TO SUIT)
1 3/4"
8
2 1/2"x1 1/2"x3.19#L (CUT TO SUIT INSTALLATION)
SNIPE 1/4" @ 45°
7
2"x2"x3.19#L CORNER UPRIGHT
2"x1/4" F.B. PORTABLE BATTEN. (CUT TO SUIT)
10
2"x1/4" F.B. FIXED BATTEN.
10
2 1/2"
3/16
8
2 1/2"x1 1/2"x3.19#L (CUT TO SUIT INSTALLATION)
3/16

DET. "5-E" (3&4)
DET. OF PORTABLE BATTEN CLIP ON 2"x2"x3.19#L
VERTICAL CORNER UPRIGHT
6"=1'-0"


11
16 GA. SHELVING (4" FLG./1" HEM)
TACK WELD
9
4"x4"x7.5#T.
2"x2"x3.19#L
7

DET. "5-A" (4)
3"=1'-0"


6
6"x2"x8.2#⊏ LANDING BAR (FORE & AFT) LOCATE TO CLEAR PIPING.
LONGL #14
LONGL #15
LONGL #16
LONGL #17
LONGL #18
LONGL #19
2ND DK.
VENT.
5
10.21# LANDING PL. (DET. "3-B")
7
2"x2"x3.19#L HANGERS (LOC. TO CLEAR PIPES)
7
2"x2"x3.19#L
SHELL
EXP. MTL. BHD. #3 W/DOOR (REF. #2)
DET. "5-E"
DET. "5-E"
2"x2"x3.19#L
7
10"
10"
10"
18"
18"
9"
32'-0" FLAT
11
16 GA. SHELVING
DET. "5-F"
4"x4"x7.5#T.
9
2"x1/4" F.B. PORTABLE BATTENS.
10


6
6"x2"x8.2#⊏ LANDING BAR (FORE & AFT) (LOCATE TO CLEAR PIPING)
LONGL #19
LONGL #18
LONGL #17
LONGL #16
LONGL #15
LONGL #14
7
2"x2"x3.19#L HANGERS (LOC. TO CLEAR PIPES)
5
10.21# LANDING PL. (DET. "3-B")
VENT
TYP. 3/16
DET. "5-E"
DET. "5-E"
EXP. MTL. W/DOOR
10"
10"
10"
18"
18"
9"
7
2"x2"x3.19#L.
DET. "5-F"
2"x2"x3.19#L
7
4"x4"x7.5#T.
9
2"x1/4" F.B. PORTABLE BATTENS.
10
11 16 GA. SHELVING

ELEV. "4-A" (2)
ELEV. OF SHELVING IN ELECTRICAL STOREROOM
PORT SIDE - LOOKING AFT
1/2"=1'-0"

ELEV. "3-A" (2)
ELEV. OF SHELVING IN ELECTRICAL WORKSHOP
PORT SIDE - LOOKING FWD.
1/2"=1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-232-00-54

Oct 1980

FRAME 2 OF 3

8X

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

BUILDERS PLAN NO. H-4650-232-00-54

FRAME 3 OF 3

8X

WELDING 11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING

THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW
		CWE 106 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C-25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K		CWE 301 SAW (Single)
(Lincoln 860-0 Flux)		CWE 302 - CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M	CWE 108 SMAW (Fillet Welds 9018M)
	11018M	(Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

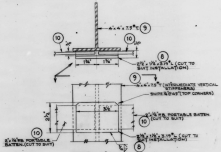
I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A-514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

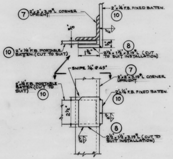
NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3


4"x4"x7.5#T. ⑨
⑩
⑩
1¾"
1¾"
⑧
2½"x1½"x3.19#L (CUT TO SUIT INSTALLATION)
⑨
4"x4"x7.5#T (INTERMEDIATE VERTICAL STIFFENERS)
SNIPE ¼"@45°(TOP CORNERS)
3½"
2½"
2"x¼"F.B. PORTABLE BATTEN (CUT TO SUIT)
⑩
2"x¼"F.B. PORTABLE BATTEN.(CUT TO SUIT)
⑩
2½"x1½"x3.19#L (CUT TO SUIT INSTALLATION)
⑧
3/16

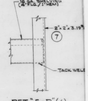
DET. "5-F" (3&4)

DET. OF PORTABLE BATTEN CLIP ON 4"x4"x7.5#T
INTERMEDIATE VERTICAL STIFFENERS
6"=1'-0"

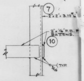

⑦ 2"x2"x3.19#L CORNER UPRIGHT.
2"x¼"F.B. FIXED BATTEN.
⑩
3/16
⑩ 2"x¼"F.B. PORTABLE BATTEN.(CUT TO SUIT)
1¾"
⑧
2½"x1½"x3.19#L (CUT TO SUIT INSTALLATION)
SNIPE ¼" @45°
⑦
2"x2"x3.19#L CORNER UPRIGHT.
2"x¼"F.B. PORTABLE BATTEN.(CUT TO SUIT)
⑩
2"x¼"F.B. FIXED BATTEN.
⑩
2½"
3/16
⑧
2½"x1½"x3.19#L (CUT TO SUIT INSTALLATION)
3/16

DET. "5-E" (3&4)

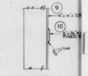
DET. OF PORTABLE BATTEN CLIP ON 2"x2"x3.19#L
VERTICAL CORNER UPRIGHT
6"=1'-0"


⑪
16 GA. SHELVING (4"FLG./1"HEM)
2"x2"x3.19#
⑦
TACK WELD

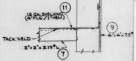
DET. "5-D" (4)
3"=1'-0"


⑦
2"x2"x3.19#L
2"x¼"F.B. BATTENS.
⑩
3/16
TYP

DET. "5-C" (4)
3"=1'-0"


⑨
4"x4"x7.5
⑩
2"x¼"F. FIXED
3/16
TYP

DET. "5-B" (4)
3"=1'-0"


⑪
16 GA. SHELVING (4"FLG./1"HEM)
⑨
4"x4"x7.5#
TACK WELD
2"x2"x3.19#L
⑦

DET. "5-A" (4)
3"=1'-0"

6

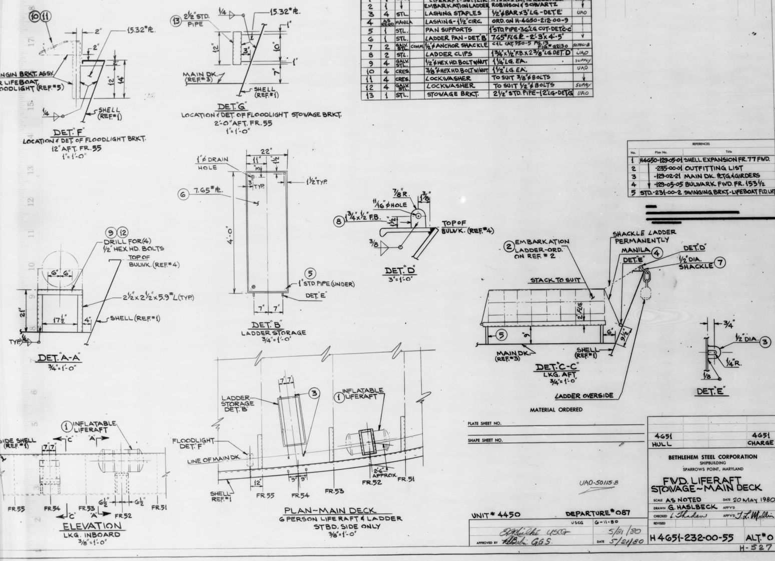
5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4651-232-00-55

Oct 1980 6X

FRAME 1 OF 2



⑩⑪
2"
15.32#℔.
2"
2"
14"
12"
ENGIN BRKT. ASSY.
R LIFEBOAT
OODLIGHT (REF.#5)
1/4
SHELL (REF.#1)
DET. "F"
LOCATION & DET. OF FLOODLIGHT BRKT.
12" AFT. FR. 55
1"=1'-0"
⑬ 2½" STD. PIPE
1/4
15.32#℔.
1"
12"
3"
10"
1"
7"
MAIN DK. (REF.#3)
SHELL (REF.#1)
DET. "G"
LOCATION & DET. OF FLOODLIGHT STOWAGE BRKT.
2'-0" AFT. FR. 55
1"=1'-0"
22"
11"
1½"
1" ϕ DRAIN HOLE
3" TYP.
1½" TYP.
⑥ 7.65#℔.
4'-0"
⑤ 1" STD. PIPE (UNDER)
DET. "E"
7"
7"
DET. "B"
LADDER STORAGE
3/4"=1'-0"
7/8"R.
3/8"
11/16" ϕ HOLE
⑧ 1¾" × ½" F.B.
TOP OF BULWK. (REF.#4)
3/8
DET. "D"
3"=1'-0"
⑨⑫
DRILL FOR (4) 1/2" HEX HD. BOLTS
TOP OF BULWK. (REF.#4)
6"
6"
2½" × 2½" × 5.9# L (TYP.)
SHELL (REF.#1)
21"
17½"
4"
TYP.
DET. "A-A"
3/4"=1'-0"
② EMBARKATION LADDER-ORD. ON REF.#2
SHACKLE LADDER PERMANENTLY
MANILA ④
DET. "E"
DET. "D"
1/2" DIA. SHACKLE ⑦
STACK TO SUIT
2'-7½"
⑤
9"
6"
9½"
MAIN DK. (REF.#3)
SHELL (REF.#1)
DET. "C-C"
LKG. AFT
3/4"=1'-0"
LADDER OVERSIDE
3/4"
1/2" DIA. ③
1/4"R.
1/8
DET. "E"
7" 7"
LADDER STORAGE DET. "B"
③
INFLATABLE LIFERAFT ①
FLOODLIGHT DET. "F"
LINE OF MAIN DK.
2'-6" APPROX.
SHELL REF.#1
12"
9" 9"
FR. 55
FR. 54
FR. 53
FR. 52
FR. 51
PLAN - MAIN DECK
6 PERSON LIFERAFT & LADDER
STBD. SIDE ONLY
3/8"=1'-0"
① INFLATABLE LIFERAFT
SIDE SHELL (REF.#1)
7 7
"C"
"A"
6½"
6½"
FR. 55
FR. 54
FR. 53
FR. 52
FR. 51
ELEVATION
LKG. INBOARD
3/8"=1'-0"

BILL OF MATERIAL

Item	Quan.	Mat'l	Spec.	Description	Remarks	Ord.
1	1	COMM		6 PERSON INFLATABLE LIFERAFT-SWITLIK	W/CRADLE, TIE DOWN STRAPS, HYDROSTATIC RELEASE.	ON REF.#2
2	1	↓		EMBARKATION LADDER	ROBINSON & SCHWARTZ	↓
3	4	STL.		LASHING STAPLES	1/2" ϕ BAR × 3" LG. - DET. "E"	UAO
4	AS REQD.	MANILA		LASHING - 1½" CIRC.	ORD. ON H-4650-212-00-9	
5	1	STL.		PAN SUPPORTS	1" STD. PIPE - 36" LG. CUT - DET. "C-C"	
6	1	STL.		LADDER PAN - DET. "B"	7.65# FLG. ℔. - 2'-3" × 4'-5"	↓
7	2	GALV. STL.	COMM	1/2" ϕ ANCHOR SHACKLE	C&L CAT. 950-5 PG. 13 FIG.# G2130	S07361-B
8	2	STL.		LADDER CLIPS	1¾" × ½" F.B. × 2⅜" LG. DET. "D"	UAO
9	4	GALV. STL.		1/2" ϕ HEX HD. BOLT W/NUT	1¼" LG. EA.	SUPPLY
10	4	CRES.		3/8" ϕ HEX HD. BOLT W/NUT	1½" LG. EA.	UAO
11	4	CRES.		LOCKWASHER	TO SUIT 3/8" ϕ BOLTS	↓
12	4	GALV. STL.		LOCKWASHER	TO SUIT 1/2" ϕ BOLTS	SUPPLY
13	1	STL.		STOWAGE BRKT.	2½" STD. PIPE - 12" LG. - DET. "G"	UAO

ALTERATIONS

No.	Item	Description	Date	By

REFERENCES

No.	Plan No.	Title
1	H4650-129-05-01	SHELL EXPANSION FR. 77 FWD.
2	-235-00-01	OUTFITTING LIST
3	-129-02-21	MAIN DK. PLTG. & GIRDERS
4	-129-05-05	BULWARK FWD. FR. 153½
5	STD.-231-00-2	SWINGING BRKT.-LIFEBOAT FLD. LHT.

[redacted]

DATE OF ISSUE

	ALTERATION	-	-
	ENGINEERING DISTRIBUTION	5/22/0	5/22/0
MAIL	Owners	4	
MAIL	American Bureau		
MAIL	Lloyd's R. S.		
MAIL	U. S. M. A.		
MAIL	U. S. Navy		
MAIL	U. S. C. G.	3	
MAIL	Joiner Cont'r.		
INSPECTION	Owner's Insp.		
INSPECTION	Am. Bu. Insp.		1
INSPECTION	Lloyd's Insp.		
INSPECTION	U. S. M. A. Insp.		
INSPECTION	U. S. Navy Insp.		
INSPECTION	U. S. C. G. Insp.		1
INSPECTION	CDSCHAUB		1
OFFICE	Hull Draft.—21		1
OFFICE	Mach. Draft.—22		2
OFFICE	Elec. Draft.—23		1
OFFICE	Outfit Draft.—25		
OFFICE	Estimating		
OFFICE	21-10 (ENK/RUS)		1
MISC.	Production (BCD)		
MISC.	Order Dept.		
MISC.	Joiner Cont. Yard		
	TOTAL ENG'R DIST.	7	8
	YARD DISTRIBUTION	/	
YARD	UAO-Office		1
YARD	Outfit—Office		
YARD	Piece Rate—11	2	2
YARD	Test Department		
YARD	PLAN'G DEPT.		3
YARD	35 DEPT		3
STRUCTURAL	Ground Assembly		3
STRUCTURAL	No. 4 Way		
STRUCTURAL	No. 5 Way		
STRUCTURAL	No. 6 Way		
STRUCTURAL	No. 7 Way		
STRUCTURAL	No. 8 Way		
STRUCTURAL	No. 9 Way		
STRUCTURAL	No. 10 Way		
STRUCTURAL	Struct. Super.		2
STRUCTURAL	Optical Detail—45		2
STRUCTURAL	Wet Dock		
MACH'Y & OUTFIT	Pipe Shop—52		
MACH'Y & OUTFIT	Outfit — #1 Pier		1
MACH'Y & OUTFIT	Pipe Draft.—52		2
MACH'Y & OUTFIT	Boiler Shop—58		
MACH'Y & OUTFIT	Outside Mach.—60		1
MACH'Y & OUTFIT	Rigging—65		2
MACH'Y & OUTFIT	Electric Shop—70		
MACH'Y & OUTFIT	Sheet Met. Shop—74		1
MACH'Y & OUTFIT	Copper Shop—51		
MACH'Y & OUTFIT	Paint Shop—75		1
OTHER	Warehouse—84		
OTHER	# ANDERSON 12 TABLE TRAILER		1
OTHER	Mold Loft—41		1
OTHER	Q-MACH. SHOP		1
OTHER	Carp. Shop—72		
OTHER	Struct. Survey		
OTHER	ORDER DEPT., WHSE		1
	TOTAL YARD DIST.	/	28

MATERIAL ORDERED

PLATE SHEET NO. ______

SHAPE SHEET NO. ______

UAO-50115-B

UNIT# 4450 DEPARTURE# 087

USCG	6-11-80
SDMielke USCG	5/21/80
APPROVED BY AEBabin G.G.S.	DATE 5/21/80

4651 HULL			4651 CHARGE

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

FWD. LIFERAFT STOWAGE ~ MAIN DECK

SCALE AS NOTED DATE 20 MAY 1980
DRAWN G. HASLBECK APP'V'D
CHECKED L. Thaden APP'V'D T. L. Mullin
REVISED

H 4651-232-00-55 ALT.# 0

H-527

36314 (Rev.A 4-71)

4651 (only)

H-4621-535-00-22

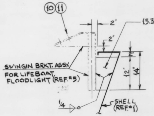
V.1

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4651-232-00-55

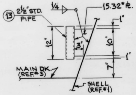
Oct 1980 6X

FRAME 2 OF 2



⑩⑪
2"
15.32# ℞.
2"
2"
12"
14"
SWINGIN BRKT. ASSY. FOR LIFEBOAT FLOODLIGHT (REF.#5)
1/4
SHELL (REF.#1)

DET. "F"
LOCATION & DET. OF FLOODLIGHT BRKT.
12" AFT. FR. 55
1" = 1'-0"



⑬ 2½" STD. PIPE
1/4
15.32# ℞.
1"
12"
3"
10"
1"
7"
MAIN DK. (REF.#3)
SHELL (REF.#1)

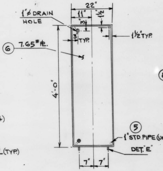
DET. "G"
LOCATION & DET. OF FLOODLIGHT STOWAGE BRKT.
2'-0" AFT. FR. 55
1" = 1'-0"

BILL OF MATERIAL

Item	Quan.	Mat'l	Spec.	Description	Remarks	Ord.
1	1	COMM		6 PERSON INFLATABLE LIFERAFT-SWITLIK	W/CRADLE, TIE DOWN STRAPS, HYDROSTATIC RELEASE.	ON REF.#2
2	1	↓		EMBARKATION LADDER	ROBINSON & SCHWARTZ	↓
3	4	STL.		LASHING STAPLES	1/2"ϕ BAR x 3" LG. - DET. "E"	UAO
4	AS REQD.	MANILA		LASHING - 1½" CIRC.	ORD. ON H-4650-212-00-9	
5	1	STL.		PAN SUPPORTS	1" STD. PIPE - 36" LG. CUT - DET. "C-C"	
6	1	STL.		LADDER PAN - DET. "B"	7.65# FLG. ℞. - 2'-3" x 4'-5"	↓
7	2	GALV. STL.	COMM	1/2"ϕ ANCHOR SHACKLE	C&L CAT. 950-5 PG. 13 FIG.# G2130	507361-B
8	2	STL.		LADDER CLIPS	1¾" x ½" F.B. x 2⅜" LG. DET. "D"	UAO
9	4	GALV. STL.		1/2"ϕ HEX HD. BOLT W/NUT	1¼" LG. EA.	SUPPLY
10	4	CRES.		3/8"ϕ HEX HD. BOLT W/NUT	1½" LG. EA.	UAO
11	4	CRES.		LOCKWASHER	TO SUIT 3/8"ϕ BOLTS	↓
12	4	GALV. STL.		LOCKWASHER	TO SUIT 1/2"ϕ BOLTS	SUPPLY
13	1	STL.		STOWAGE BRKT.	2½" STD. PIPE - 12" LG. - DET. "G"	UAO

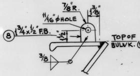
ALTERATIONS

No.	Item	Description	Date	By



22"
11"
1½"
3"
1"ϕ DRAIN HOLE
3" TYP.
1½" TYP.
⑥ 7.65# ℞.
4'-0"
⑤ 1" STD. PIPE (UNDER)
DET. "E"
7"
7"

DET. "B"
LADDER STORAGE
3/4" = 1'-0"



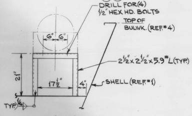
7/8" R.
1⅜"
11/16"ϕ HOLE
⑧ 1¾" x ½" F.B.
½"
TOP OF BULWK. (REF.#4)
3/8

DET. "D"
3" = 1'-0"

REFERENCES

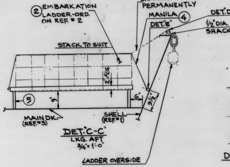
No.	Plan No.	Title
1	H4650-129-05-01	SHELL EXPANSION FR. 77 FWD.
2	-235-00-01	OUTFITTING LIST
3	-129-02-21	MAIN DK. PLTG. & GIRDERS
4	-129-05-05	BULWARK FWD. FR. 153½
5	STD.-231-00-2	SWINGING BRKT.-LIFEBOAT FLD. LHT.

[redacted]



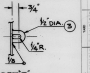
⑨⑫
DRILL FOR (4) 1/2" HEX HD. BOLTS
TOP OF BULWK. (REF.#4)
6"
6"
2½" x 2½" x 5.9# L (TYP.)
21"
17½"
4"
SHELL (REF.#1)
TYP. 1/4

DET. "A-A"
3/4" = 1'-0"



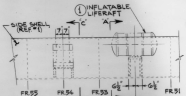
SHACKLE LADDER PERMANENTLY
② EMBARKATION LADDER-ORD. ON REF. #2
MANILA ④
DET. "D"
DET. "E"
1/2" DIA. SHACKLE ⑦
STACK TO SUIT
2" FLG.
⑤
9"
6"
9½"
MAIN DK. (REF.#3)
SHELL (REF.#1)
LADDER OVERSIDE

DET. "C-C"
LKG. AFT
3/4" = 1'-0"



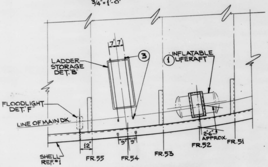
3/4"
1/2" DIA. ③
1/4" R.
1/8

DET. "E"



① INFLATABLE LIFERAFT
SIDE SHELL (REF.#1)
"C"
"A"
7"
7"
6½"
6½"
FR.55
FR.54
FR.53
FR.52
FR.51
"C"
"A"

ELEVATION
LKG. INBOARD
3/8" = 1'-0"



7"
7"
LADDER STORAGE DET. "B"
③
① INFLATABLE LIFERAFT
FLOODLIGHT DET. "F"
LINE OF MAIN DK.
12"
9"
9"
2'-6" APPROX.
SHELL REF.#1
FR.55
FR.54
FR.53
FR.52
FR.51

PLAN - MAIN DECK
6 PERSON LIFERAFT & LADDER
STBD. SIDE ONLY
3/8" = 1'-0"

MATERIAL ORDERED

PLATE SHEET NO.

SHAPE SHEET NO.

UAO-50115-B

UNIT # 4450
DEPARTURE # 087

	USCG	6-11-80
	DMielke USCG	5/21/80
APPROVED BY	RBabin G.G.S.	DATE 5/21/80

4651 HULL
4651 CHARGE

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

FWD. LIFERAFT
STOWAGE ~ MAIN DECK

SCALE AS NOTED
DATE 20 May 1980
DRAWN G. HASLBECK
APP'V'D
CHECKED L. Thaden
APP'V'D T. L. Mullin
REVISED

H 4651-232-00-55
ALT. # 0

H-527

		-	-
	ALTERATION	-	-
	ENGINEERING DISTRIBUTION	5/22/0	5/22/0
MAIL	Owners	4	
MAIL	American Bureau		
MAIL	Lloyd's R. S.		
MAIL	U. S. M. A.		
MAIL	U. S. Navy		
MAIL	U. S. C. G.	3	
MAIL	Joiner Cont'r.		
INSPECTION	Owner's Insp.		
INSPECTION	Am. Bu. Insp.		1
INSPECTION	Lloyd's Insp.		
INSPECTION	U. S. M. A. Insp.		
INSPECTION	U. S. Navy Insp.		
INSPECTION	U. S. C. G. Insp.		1
INSPECTION	CDSCHAUB		1
OFFICE	Hull Draft.—21		1
OFFICE	Mach. Draft.—22		2
OFFICE	Elec. Draft.—23		1
OFFICE	Outfit Draft.—25		
OFFICE	Estimating		
OFFICE	21-10 (ENK/RUS)		1
MISC.	Production (BCD)		
MISC.	Order Dept.		
MISC.	Joiner Cont. Yard		
	TOTAL ENG'R DIST.	7	8
	YARD DISTRIBUTION	/	
YARD	UAO—Office		1
YARD	Outfit—Office		
YARD	Piece Rate—11	2	2
YARD	Test Department		
YARD	PLAN'G DEPT.		3
YARD	35 DEPT		3
STRUCTURAL	Ground Assembly		3
STRUCTURAL	No. 4 Way		
STRUCTURAL	No. 5 Way		
STRUCTURAL	No. 6 Way		
STRUCTURAL	No. 7 Way		
STRUCTURAL	No. 8 Way		
STRUCTURAL	No. 9 Way		
STRUCTURAL	No. 10 Way		
STRUCTURAL	Struct. Super.		2
STRUCTURAL	Optical Detail—45		2
STRUCTURAL	Wet Dock		
MACH'Y & OUTFIT	Pipe Shop—52		
MACH'Y & OUTFIT	Outfit — #1 Pier		1
MACH'Y & OUTFIT	Pipe Draft.—52		2
MACH'Y & OUTFIT	Boiler Shop—58		
MACH'Y & OUTFIT	Outside Mach.—60		1
MACH'Y & OUTFIT	Rigging—65		2
MACH'Y & OUTFIT	Electric Shop—70		
MACH'Y & OUTFIT	Sheet Met. Shop—74		1
MACH'Y & OUTFIT	Copper Shop—51		
MACH'Y & OUTFIT	Paint Shop—75		1
OTHER	Warehouse—84		
OTHER	# ANDERSON 12 TABLE TRAILER		1
OTHER	Mold Loft—41		1
OTHER	Q-MACH. SHOP		1
OTHER	Carp. Shop—72		
OTHER	Struct. Survey		
OTHER	ORDER DEPT. WHSE		1
	TOTAL YARD DIST.	/	2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

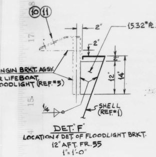
BUILDERS PLAN NO. H-4651-232-00-55

Oct 1980 6X

FRAME 1 OF 2

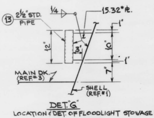
BILL OF MATERIAL						
Item	Quan.	Mat'l	Spec.	Description	Remarks	Ord.
1	1	COMM		6 PERSON INFLATABLE LIFERAFT-SWITLIK	W/CRADLE, TIE DOWN STRAPS, HYDROSTATIC RELEASE.	ON REF.#2
2	1	↓		EMBARKATION LADDER	ROBINSON & SCHWARTZ	↓
3	4	STL.		LASHING STAPLES	1/2"ϕ BAR x 3" LG. - DET. "E"	UAO
4	AS REQD.	MANILA		LASHING - 1 1/2" CIRC.	ORD. ON H-4650-212-00-9	
5	1	STL.		PAN SUPPORTS	1" STD. PIPE - 36" LG. CUT - DET. "C-C"	
6	1	STL.		LADDER PAN - DET. "B"	7.65# FLG. PL. - 2'-3" x 4'-5"	↓
7	2	GALV. STL.	COMM	1/2"ϕ ANCHOR SHACKLE	C&L CAT. 950-5 PG. 13 FIG.# G2130	507361-B
8	2	STL.		LADDER CLIPS	1 3/4" x 1/2" F.B. x 2 3/8" LG. DET. "D"	UAO
9	4	GALV. STL.		1/2"ϕ HEX HD. BOLT W/NUT	1 1/4" LG. EA.	SUPPLY
10	4	CRES.		3/8"ϕ HEX HD. BOLT W/NUT	1 1/2" LG. EA.	UAO
11	4	CRES.		LOCKWASHER	TO SUIT 3/8"ϕ BOLTS	↓
12	4	GALV. STL.		LOCKWASHER	TO SUIT 1/2"ϕ BOLTS	SUPPLY
13	1	STL.		STOWAGE BRKT.	2 1/2" STD. PIPE - 12" LG. - DET. "G"	UAO

ALTERATIONS				
No.	Item	Description	Date	By



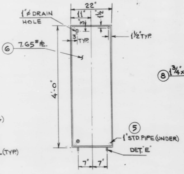
⑩⑪
2"
15.32# PL.
2"
2"
12"
14"
1/4
SHELL (REF.#1)
...NGIN BRKT. ASSY. ...R LIFEBOAT ...OODLIGHT (REF.#5)

DET. "F"
LOCATION & DET. OF FLOODLIGHT BRKT.
12" AFT. FR. 55
1" = 1'-0"



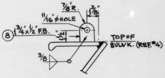
⑬ 2 1/2" STD. PIPE
1/4
15.32# PL.
1"
12"
3"
10"
1"
7"
MAIN DK. (REF.#3)
SHELL (REF.#1)

DET. "G"
LOCATION & DET. OF FLOODLIGHT STOWAGE BRKT.
2'-0" AFT. FR. 55
1" = 1'-0"



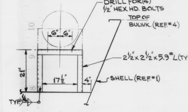
22"
11"
1 1/2"
1"ϕ DRAIN HOLE
3" TYP.
1 1/2" TYP.
⑥ 7.65# PL.
4'-0"
⑤ 1" STD. PIPE (UNDER)
DET. "E"
7"
7"

DET. "B"
LADDER STORAGE
3/4" = 1'-0"



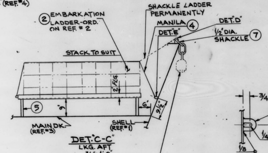
7/8"R.
3/8"
1/8"
11/16"ϕ HOLE
⑧ 1 3/4" x 1/2" F.B.
3/8
TOP OF BULWK. (REF.#4)

DET. "D"
3" = 1'-0"



⑨⑫
DRILL FOR (4) 1/2" HEX. HD. BOLTS
TOP OF BULWK. (REF.#4)
6"
6"
2 1/2" x 2 1/2" x 5.9# L (TYP.)
21"
17 1/2"
4"
SHELL (REF.#1)
TYP.

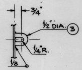
DET. "A-A"
3/4" = 1'-0"



② EMBARKATION LADDER-ORD. ON REF.#2
SHACKLE LADDER PERMANENTLY
MANILA ④
DET. "E"
DET. "D"
1/2" DIA. SHACKLE ⑦
STACK TO SUIT
2'-6"
⑤
9"
6"
9 1/2"
MAIN DK. (REF.#3)
SHELL (REF.#1)

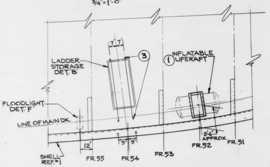
DET. "C-C"
LKG. AFT
3/4" = 1'-0"

LADDER OVERSIDE



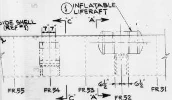
3/4"
1/2" DIA. ③
1/4" R.
1/8

DET. "E"



LADDER STORAGE DET. "B"
7"
7"
③
① INFLATABLE LIFERAFT
FLOODLIGHT DET. "F"
LINE OF MAIN DK.
2'-6" APPROX.
12"
9"
9"
SHELL REF.#1
FR.55
FR.54
FR.53
FR.52
FR.51

PLAN - MAIN DECK
6 PERSON LIFERAFT & LADDER
STBD. SIDE ONLY
3/8" = 1'-0"



① INFLATABLE LIFERAFT
...SIDE SHELL (REF.#1)
"C"
"A"
7"
7"
FR.55
FR.54
FR.53
FR.52
FR.51
6 1/2"
6 1/2"
"C"
"A"

ELEVATION
LKG. INBOARD
3/8" = 1'-0"

REFERENCES		
No.	Plan No.	Title
1	H4650-129-05-01	SHELL EXPANSION FR. 77 FWD.
2	-235-00-01	OUTFITTING LIST
3	-129-02-21	MAIN DK. PLTG. & GIRDERS
4	-129-05-05	BULWARK FWD. FR. 153 1/2
5	STD.-231-00-2	SWINGING BRKT.-LIFEBOAT FLD. LHT.

MATERIAL ORDERED

PLATE SHEET NO.

SHAPE SHEET NO.

UAO-50115-B

UNIT # 4450

DEPARTURE # 087

USCG	6-11-80
DRMielke USCG	5/21/80
APPROVED BY KBabin G.G.S.	DATE 5/21/80

4651 HULL	4651 CHARGE

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

FWD. LIFERAFT STOWAGE ~ MAIN DECK

SCALE AS NOTED DATE 20 MAY 1980
DRAWN G. HASLBECK APP'V'D
CHECKED L. Thaden APP'V'D T. L. Mullin
REVISED

H 4651-232-00-55 ALT. # 0

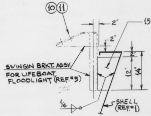
H-527

		DATE OF ISSUE	
	ALTERATION	-	-
	ENGINEERING DISTRIBUTION	5-22-0	5-22-0
MAR.	Owners	4	
	American Bureau		
	Lloyd's R. S.		
	U. S. M. A.		
	U. S. Navy		
	U. S. C. G.	3	
	Joiner Cont'r.		
INSPECTION	Owner's Insp.		
	Am. Bu. Insp.		1
	Lloyd's Insp.		
	U. S. M. A. Insp.		
	U. S. Navy Insp.		
	U. S. C. G. Insp.		1
	CDSCHAUB		1
OFFICE	Hull Draft.—21		1
	Mach. Draft.—22		2
	Elec. Draft.—23		1
	Outfit Draft.—25		
	Estimating		
	21-10 (ENK/RUS)		1
MISC.	Production (BCD)		
	Order Dept.		
	Joiner Cont. Yard		
	TOTAL ENG'R DIST.	7	8
	YARD DISTRIBUTION		
YARD	UAO-Office		1
	Outfit—Office		
	Piece Rate—11	2	2
	Test Department		
	PLAN'G DEPT.		3
	35 DEPT		3
STRUCTURAL	Ground Assembly		3
	No. 4 Way		
	No. 5 Way		
	No. 6 Way		
	No. 7 Way		
	No. 8 Way		
	No. 9 Way		
	No. 10 Way		
	Struct. Super.		2
	Optical Detail—45		2
	Wet Dock		
MACH'Y & OUTFIT	Pipe Shop—52		
	Outfit — #1 Pier		1
	Pipe Draft.—52		2
	Boiler Shop—58		
	Outside Mach.—60		1
	Rigging—65		2
	Electric Shop—70		
	Sheet Met. Shop—74		1
	Copper Shop—51		
	Paint Shop—75		1
OTHER	Warehouse—84		
	# ANDERSON 12 TABLE TRAILER		1
	Mold Loft—41		1
	Q-MACH. SHOP		1
	Corp. Shop—72		
	Struct. Survey		
	ORDER DEPT. WHSE		1
	TOTAL YARD DIST.		28

4651 (CAR 19)

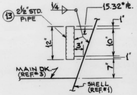
36314 (Rev. A 4-71)

H-4621-535-00-22



⑩⑪
2"
15.32# ℞.
2"
2"
12"
14"
SWINGIN BRKT. ASSY. FOR LIFEBOAT FLOODLIGHT (REF.#5)
1/4
SHELL (REF.#1)

DET. "F"
LOCATION & DET. OF FLOODLIGHT BRKT.
12" AFT. FR. 55
1"=1'-0"



⑬ 2½" STD. PIPE
1/4
15.32# ℞.
1"
12"
3/4"
10"
1"
7"
MAIN DK. (REF.#3)
SHELL (REF.#1)

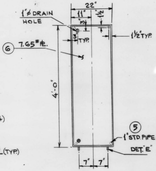
DET. "G"
LOCATION & DET. OF FLOODLIGHT STOWAGE BRKT.
2'-0" AFT. FR. 55
1"=1'-0"

BILL OF MATERIAL

Item	Quan.	Mat'l	Spec.	Description	Remarks	Ord.
1	1	COMM		6 PERSON INFLATABLE LIFERAFT-SWITLIK	W/CRADLE, TIE DOWN STRAPS, HYDROSTATIC RELEASE.	ON REF.#2
2	1	↓		EMBARKATION LADDER	ROBINSON & SCHWARTZ	↓
3	4	STL.		LASHING STAPLES	½"ϕ BAR x 3" LG. - DET. "E"	UAO
4	AS REQD.	MANILA		LASHING - 1½" CIRC.	ORD. ON H-4650-212-00-9	
5	1	STL.		PAN SUPPORTS	1" STD. PIPE - 36" LG. CUT - DET. "C-C"	
6	1	STL.		LADDER PAN - DET. "B"	7.65# FLG. ℞. - 2'-3" x 4'-5"	↓
7	2	GALV. STL.	COMM	½"ϕ ANCHOR SHACKLE	C&L CAT. 950-5 PG. 13 FIG.# G2130	507361-B
8	2	STL.		LADDER CLIPS	1¾" x ½" F.B. x 2⅜" LG. DET. "D"	UAO
9	4	GALV. STL.		½"ϕ HEX HD. BOLT W/NUT	1¼" LG. EA.	SUPPLY
10	4	CRES.		⅜"ϕ HEX HD. BOLT W/NUT	1½" LG. EA.	UAO
11	4	CRES.		LOCKWASHER	TO SUIT ⅜"ϕ BOLTS	↓
12	4	GALV. STL.		LOCKWASHER	TO SUIT ½"ϕ BOLTS	SUPPLY
13	1	STL.		STOWAGE BRKT.	2½" STD. PIPE - 12" LG. - DET. "G"	UAO

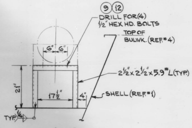
ALTERATIONS

No.	Item	Description	Date	By



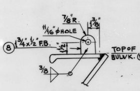
22"
11"
1" ϕ DRAIN HOLE
3/4"
1½" TYP.
⑥ 7.65# ℞.
TYP.
4'-0"
⑤ 1" STD. PIPE (UNDER)
DET. "E"
7"
7"

DET. "B"
LADDER STORAGE
3/4"=1'-0"



⑨⑫ DRILL FOR (4) ½" HEX HD. BOLTS
TOP OF BULWK. (REF.#4)
6"
6"
2½" x 2½" x 5.9# L (TYP.)
21"
17½"
4"
SHELL (REF.#1)
TYP. 1/4

DET. "A-A"
3/4"=1'-0"

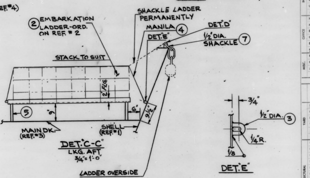


7/8" R.
11/16" ϕ HOLE
3/8"
⑧ 1¾" x ½" F.B.
TOP OF BULWK. (REF.#4)
3/8

DET. "D"
3"=1'-0"

REFERENCES

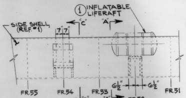
No.	Plan No.	Title
1	H4650-129-05-01	SHELL EXPANSION FR. 77 FWD.
2	-235-00-01	OUTFITTING LIST
3	-129-02-21	MAIN DK. PLTG. & GIRDERS
4	-129-05-05	BULWARK FWD. FR. 153½
5	STD.-231-00-2	SWINGING BRKT.-LIFEBOAT FLD. LHT.



② EMBARKATION LADDER-ORD. ON REF.#2
SHACKLE LADDER PERMANENTLY
MANILA ④
DET. "E"
DET. "D"
½" DIA. SHACKLE ⑦
STACK TO SUIT
2 FLG.
⑤
9"
6"
9½"
MAIN DK. (REF.#3)
SHELL (REF.#1)
LADDER OVERSIDE
3/4"
½" DIA. ③
¼" R.
1/8

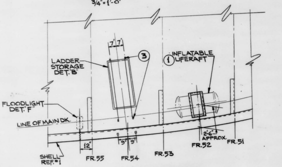
DET. "C-C"
LKG. AFT
3/4"=1'-0"

DET. "E"



① INFLATABLE LIFERAFT
SIDE SHELL (REF.#1)
7" 7"
"C"
"A"
FR. 55
FR. 54
FR. 53
6½"
6½"
FR. 51
"C"
"A"
FR. 52

ELEVATION
LKG. INBOARD
3/8"=1'-0"



7" 7"
LADDER STORAGE DET. "B"
③
① INFLATABLE LIFERAFT
FLOODLIGHT DET. "F"
LINE OF MAIN DK.
SHELL REF.#1
12"
9" 9"
FR. 55
FR. 54
FR. 53
2'-6" APPROX.
FR. 52
FR. 51

PLAN - MAIN DECK
6 PERSON LIFERAFT & LADDER
STBD. SIDE ONLY
3/8"=1'-0"

MATERIAL ORDERED

PLATE SHEET NO.

SHAPE SHEET NO.

UAO-50115-B

UNIT # 4450   DEPARTURE # 087

	USCG	6-11-80
	DRMuilke USCG	5/21/80
APPROVED BY	RBabin G.G.S.	DATE 5/21/80

4651 HULL   4651 CHARGE

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND

FWD. LIFERAFT STOWAGE ~ MAIN DECK

SCALE AS NOTED   DATE 20 MAY 1980
DRAWN G. HASLBECK   APP'V'D
CHECKED L. Thaden   APP'V'D T. L. Mullin
REVISED

H 4651-232-00-55   ALT. # 0

H-527

		ALTERATION	-	-
		ENGINEERING DISTRIBUTION	5/22/0	5/22/0
MAIL		Owners	4	
		American Bureau		
		Lloyd's R. S.		
		U. S. M. A.		
		U. S. Navy		
		U. S. C. G.	3	
		Joiner Cont'r.		
INSPECTION		Owner's Insp.		
		Am. Bu. Insp.		1
		Lloyd's Insp.		
		U. S. M. A. Insp.		
		U. S. Navy Insp.		
		U. S. C. G. Insp.		1
		CDSCHAUB		1
OFFICE		Hull Draft.—21		1
		Mach. Draft.—22		2
		Elec. Draft.—23		1
		Outfit Draft.—25		
		Estimating		
		21-10 (ENK/RUS)		1
MISC.		Production (BCD)		
		Order Dept.		
		Joiner Cont. Yard		
		TOTAL ENG'R DIST.	7	8
		YARD DISTRIBUTION		
YARD		UAO-Office		1
		Outfit—Office		
		Piece Rate—11	2	2
		Test Department		
		PLAN'G DEPT.		3
		35 DEPT		3
STRUCTURAL		Ground Assembly		3
		No. 4 Way		
		No. 5 Way		
		No. 6 Way		
		No. 7 Way		
		No. 8 Way		
		No. 9 Way		
		No. 10 Way		
		Struct. Super.		2
		Optical Detail—45		2
		Wet Dock		
MACH'Y & OUTFIT		Pipe Shop—52		
		Outfit — #1 Pier		1
		Pipe Draft.—52		2
		Boiler Shop—58		
		Outside Mach.—60		1
		Rigging—65		2
		Electric Shop—70		
		Sheet Met. Shop—74		1
		Copper Shop—51		
		Paint Shop—75		1
OTHER		Warehouse—84		
		# ANDERSON 12 TABLE TRAILER		1
		Mold Loft—41		1
		Q-MACH. SHOP		1
		Carp. Shop—72		
		Struct. Survey		
		ORDER DEPT., WHSE		1
		TOTAL YARD DIST.		21

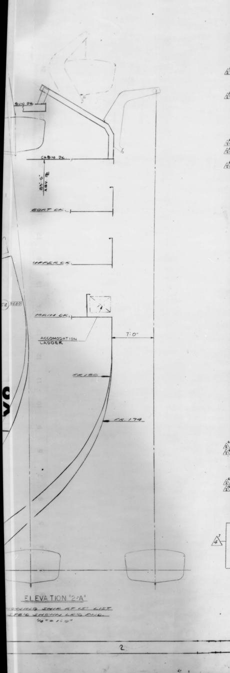
4651 (ONLY)

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

OCT 1980 6X

BUILDERS PLAN NO. H-4651-232-00-55

FRAME 2 OF 2



ELEVATION "2-A"
...SHIP AT 15° LIST
...SHOWN...
1/2"=1'-0"

LIST OF MATERIAL (QTY FOR ONE SHIP)

ITEM	NAME	QTY.	MAT'L	SPECS	DESCRIPTION	REMARKS	WT	SOURCE
1	~~RAILING~~ LEG, FLOODLT FD.	23 L.F.	STL GALV	TYP GRB	2" SCH 40 PIPE	2.375 O.D.x2.067 I.D. 3-C 4-C		PIPE SHT #1644
2								
3								
4								
5								
6	BOLT	22	STL(GALV)	COMM'L	3/8" DIA 16 NC 2	L=2" 10-A 11-A		SUPPLY
7	LOCKWASHER	22			3/8" ⌀ PLAIN	FOR Pc. #6 10-A 11-A		
8	NUT	22			3/8" DIA 16 NC 2	10-A 11-A		
9	DRIP SHIELD	3			#10 GA SHT. METAL	48"x144" 10-A 11-A		S/O
10	TRACK GUARD	3	CRES		16 GA EXP METAL 1/2" FLAT MESH	48"x120" 9-B		507343
11	SELF TAPPING SCREW	56			#10 RD. HD x 3/4" LG	9-B		507330
12	WASHER			COML	1 1/2" DIA x 1/16" THK	DRILL FOR Pc. #11, 9-B		SHT METAL SHOP
13	DAVIT SUPPORT BRACING	50 L/F	STL (GALV)	ASTM-A53	1 1/4" SCH 40 PIPE	SECT. 8-A		PIPE SHT #1644
14	FLOODLIGHT SUPPORT BOLTS	6		COMM'L	3/8" DIA. HEX. HD. BOLTS	16 NC-2 - 1 1/2" LG 3-B		SUPPLY
15	BOLT	8			3/4" DIA 10 NC 2	L=2" 4-D		SUPPLY
16	LOCKWASHER	8				FOR Pc. #15 4-D		
17	NUT	8			3/4" DIA. 10 NC 2	4-D		
18	FLOODLIGHT SUPPORT	6		COMM'L	3/8" DIA. HEX. NUT	16 NC-2 3-B		SUPPLY
19								
20	AFT L.B. DAVIT, FLOODLT FDN	120 L.F.	STL(GALV)	ASTM-A53	2 1/2" SCH. 40 PIPE	SECT 8-A, ELEV. 7-A1, DET. 3-B, 6-A		PIPE SHT #1644
21	GRAB BAR	2		ABS GR A	3/4" DIA. BAR	L=11" EA. 10-E		S/O
22	STAPLE	4			1/2" DIA.	L=3" EA. 10-C		
23	LASHING HOOK	28			1/4" DIA	L=1" EA. 10-D		
24	LEG SUPPORTS	8	STL	ASTM-A53	1" SCH. 40 PIPE	L=6" EA. 10-G		CUTTINGS
25	TOGGLE PIN FERRULE	2	STL(GALV)		1/2" SCH. 40 PIPE	L=3" EA.		CUTTINGS
26	TOGGLE PIN W/CHAIN	2	CRES	COMM'L	1/2" ⌀ W/ 3" GRIP LG. (W/ CHAIN)	E. WEBB CO. CAT. 72 P. 61		507330-B
27	EMBARKATION LADDER	2	COMM'L		ORDERED ON REF. #17	USCG APPROVED TYPE.	10-G	—
28	FLOODLIGHT SUPPORT	6	GALV STL		3/8" LOCK WASHER	FOR ITEM #14 3-B		SUPPLY
29	3/8" CHECKERD PL	2	STL			2'6"x3'6" 4-C1		S/O
30	HAND RAIL - 1 1/2" DIA.	41 L/F		AISI-C-1018	1 1/2" DIA. ROUND BAR	4-C		
31	HAND RAIL - 3/4" DIA.	28 L/F			3/4" DIA	4-C		
32	TROUGH SUPPORT	4			3"x1/4" F.B. x 2'-9"	4-C		
33	KEEPER CHOCK	4	WOOD	COML	OREGON PINE (CUT TO SUIT)	12"x12"x6", 7-B		CARPENTER SHOP
34	BOLT, HX HD	12	CRES		1/2"-13 NC-2	L=7" 7-B		507330
35	NUT, HX HD	12			1/2-13 NC-2	FOR ITEM #34 7-B		
36	LOCKWASHER	12			1/2" DIA NOM.	7-B		
37								
38	MAINTENANCE PLATFORM	2	STL	ABS GR A	6"x3/16" F.B.	13'-0" LG. 4-C1		S/O
39		1			3'0"x2'3"x15.32# PL.	TO CUT 8 4-C		
40		1			4'0"x4'0"x15.32# PL	TO CUT 8 4-C		
41		8			2 1/2"x3/8" F.B	4 1/4" LG. 5-C		
42		4			2 1/2"x3/8" F.B.	5'0" LG. 4-C		
43	MAINTENANCE PLATFORM	8			3/4" SQ. BAR	15" LG. 4-D		
44	LADDER SHIELD	2		COMM'L	3'6"x18"x#16 GA. SHT. MT.	5-D		
45	(FWD) DRIP PAN SUPPORT	45 L.F.	GALV STL	ASTM A-53	3" ⌀ SCH #40 PIPE	CUT TO SUIT 9-E, 9-A (45'-0")		PIPE SHT. #1644
46	(FWD)	20 L.F.			2" ⌀ SCH #40 PIPE	CUT TO SUIT 9-A, 9-E (20'-0")		
47	(FWD)	2	STL	ABS GR A	6"x1/2" F.B. x 4'-5"	9-A 9-E		S/O
48	TROUGH FOR FALLS	1		ASTM A-53	6" ⌀ SCH #40 PIPE	(SPLIT FOR TWO) 11-C		PIPE SHT #1644
49	TROUGH SUPPORT	2		ABS GR A	C 5"x6.7# L=5'-0"	12-B		S/O
50	W.R. FALLS DRIP PAN	6			2"x2"x2.44# ∟ x 20'-0"	(CUT TO SUIT) 10-A, 11-A		
51	OUTB'D DAVIT BRKT'S	6			20.42# PL x 10"x2'-10"	4-A		
52	INB'D DAVIT BRKTS	6			20.42# PL x 10"x3'-0"	3-E		
53	(AFT DAVIT) TROUGH BRK'T	2			15.32# PL x 12"x12"	11-D		
54	DRIP PAN SUPPORT	8			10.21# PL x 6"x12"	9A, 9-E		
55	(AFT) DRIP PAN SUPPORT	2			15.32# PL x 24"x36"	(CUT 2) 12-B, 11-B		
56	TROUGH SUPPORT BRKT	8			10.21# PL x 6"x6"	12-B		
57								
58								
59								
60								
61	BRACE	4	STL	ABS GR A	6"x1/2" F.B.	13" LG 7-A1		S/O
62		4	STL	ABS GR A	6"x1/2" F.B.	3'0" LG. 7-A1		
63								
64	BRACE	4	STL	ABS GR A	20.42# PL x 8"	24" LG. 8-A		S/O
65	BRACE	4			12"x12"x20.42# PL.	8-A		
66	DAVIT ARM	4			MC 10"x29.9# C	5'-0" LG. 7-A, 8-B		
67	" "	4			20.42# PL x 12"x15"	" "		
68								
69								
70	BRACE	2	STL	ABS GR A	2'10"x10"x20.42# PL.	8-A		S/O
71	EMBARKATION LADDER	2			4'3"x2'4"x5.10# PL.	10-F		
72	EMBARKATION LADDER	4			2"x1/2" F.B.	6" LG. 10-B		
73	FLOODLIGHT SUPPORT	4			9"x6"x15.32# PL	3-B, 6-A		
74	FLOODLIGHT SUPPORT	4	STL		9"x4 1/2"x15.32# PL	5-B		
75								
76	DAVIT ARM	4	STL	ABS GR A	6"x1/2" F.B	20" LG. 7-A1		S/O
77		8			9"x9"x20.42# PL	9-D		
78		4			12"x15"x20.42# PL	7-A1		
79		2			5 1/4"x4 7/8"x15.32# PL	3-B		
80		2			3" DIA. x 15.32# PL.	3-B		
81		2			10"x10"x10.21# PL	7-A1		
82								
83	L.B. CHOCK COVER	4	NEOPRENE	COMM'L	24"x24"x1/8" TH'K.	CUT TO SUIT 7-B		507324
84	L.B. CHOCK COVER TACKS	100	COPPER	COMM'L	1" LG TACKS	E. WEBB CAT. 72 P. 386, FIG 2142		7-B 507330
85	CLEAT FRAPPING LINE	4	CAST STEEL		12" CLEATS MARK 301	REF. #14		4-A 507335
86	PIPE TROUGH COVER PLT	8	STEEL	ABS-GR A	9"x6'-0"x5.10# PLT	SEE DET "12-D"		
87	#10-24 RD HD SELF TAPPING SCREWS	110	CRES	COMM'L	1" LG - SELF TAPPING	SEE DET "12-D"		
88	PLATFORM COVER	2	STEEL	ABS-GR A	6'6"x2'6"x3/8" CKR PLT	SEE DET "4-B"		
89	PLATF SUPPORTS	2	STEEL	ABS-GR A	25'-0" LG EA - CUT TO SUIT			
90	LEG SUPPORTS	2	STEEL	ABS-GR A	5'-0" LG EA - CUT TO SUIT			
91	1/2" DIA HEX HD BOLTS	14	CRES	COMM'L	16-UNC-2A - 1 1/2" LG			
92	1/2 HEX HD NUTS	14	CRES	COMM'L	16-UNC-2B			
93	RUNGS	2	STEEL	ABS-GR A	3/4" RD BAR x 22'-0" LG - CUT TO SUIT	SEE DET "9-F"		

U.S. COAST GUARD APP'LS.

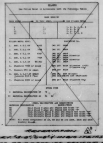
DAVITS - 160.032/179/0
DAVIT ARMS - 160.032/179/0
WINCH - 160.015/118/0
MOTOR LIFEBOAT - 160.035/443/4 - HANDPROPELLED LIFEBOAT - 160.035/410/8
RELEASING GEAR - 160.033/39/4
EMBARKTION LADDER - LATER
MAX WORKING LOAD PER DAVIT ARM - 11,000#
BREAKING STRENGTH OF BOAT FALLS - 33,000#
MAX WORKING LOAD PER FALL - 5,500#

LIFEBOAT CAPACITY & WEIGHT

MOTORBOAT - 74 PERSONS MAX.
RECERTIFIED - 55 PERSONS MAX.

HAND PROPELLED BOAT - 78 PER MAX.
RECERTIFIED - 55 PERSONS MAX

MOTOR LIFEBOAT WEIGHT EMPTY - 5680#
HAND PROPELLED LIFEBOAT WEIGHT EMPTY - 4620#
MOTOR LIFEBOAT LOWERING WEIGHT - 16,175#
HAND PROPELLED LIFEBOAT LOWERING WEIGHT - 14,837#
MOTOR LIFEBOAT TEST WEIGHT - 17,793#
HAND PROPELLED LIFEBOAT TEST WEIGHT - 16,321#


WELDING
Use Filler Metal in Accordance with the Following Table.
STEEL CODE
STEEL DESIGNATION AND DESCRIPTION
MATERIAL DESIGNATION — DESCRIPTION
MA — Mild Steel Plates and Shapes ABS Grade "A"
MB — Mild Steel Plates and Shapes ABS Grade "B"
AH — High Strength Steel Plates and Shapes ABS Grade "AH"
DH — High Strength Steel Plates and Shapes ABS Grade "DH"
EH — High Strength Steel Plates and Shapes ABS Grade "EH"
NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

~~RESERVATION~~

~~1. IN ELEV. "3-B", "6-B" & IN B/M ITEMS # 14, 18, 25, 26, 28, 79 RESERVED PENDING FLOODLIGHT INFO FROM DEPT. 23.~~

GENERAL NOTES

1. ALL WELDING TO BE IN ACCORDANCE WITH ABS RULES & REF. #1. AND ALL WELDING TO BE 1/4 UNLESS NOTED.
2. FOR GENERAL NOTES PERTAINING TO STRUCTURAL PLANS SEE REF. #2
3. LINERS ARE TO BE PR 610 FR CHOCK RESIN & FORMED IN ACCORDANCE WITH PHILADELPHIA RESIN CO. INC. TECHNICAL BULLETIN.
4. ALL SNIPES TO BE 1 1/2" RADIUS UNLESS OTHERWISE NOTED.
5. LIFE BOATS TO BE RE-CERTIFIED FOR 55 PERSONS, COMPLETE WITH EQUIPMENT PROVISIONS, No. 6 CANVAS COVERS, RIDGE POLE, SPREADERS, DACRON SAILS & SKID FENDERS.
6. LIFE BOATS ARE 30 FT. FIBROUS GLASS REINFORCED PLASTIC. HAND PROPELLED (PORT), MOTOR PROPELLED (STB'D) BY MASECO., POINT PLEASANT N.J., REF. 7 & 16.
7. BOAT WINCH TYPE, MASECO 55G - MK IV
8. DAVIT TRACKS ARE TO BE SET LEVEL IN RESPECT TO EACH OTHER & NORMAL TO SIDE OF SHIP. CARE TO BE TAKEN TO INSURE THAT TRACKS ARE SET PARALLEL TO EACH OTHER
9. DAVIT TO BE MASECO. DWG. F-03-F-084.
10. TEMPLATE BOLT HOLES FROM UNIT.

UAO-50115

REFERENCE PLANS

NO.	PLAN NO.	TITLE
18	H-4650-129-04-11	BRIDGE DECK PLATING & GIRDERS
17	H-4650-235-00-01	OUTFITTING LIST
16	MASECO A-301-M	GENERAL ARRG'T 30'x10'x4'-4" PLASTIC LIFE-BOAT, MOTOR PROPELLED
15	E-4650-202-10-13	L.O.E. NAV. BR. DK. & HSE. TOP
14	STD-212-00-6	CLEATS
13	H-4650-212-00-07	TURNBUCKLE, SOCKET & CLEAT LIST
12	235-00-02	WEATHER CLOTH & COVER LIST
11	129-04-17	ENCL. BHD & FASH. PL SUN DK.
10	129-04-15	ENCL BHDS. & FASHION PLTS. BOAT DK.
9	H-4650-212-00-09	MANILA & WIRE ROPE LIST
8	MASECO WI-F-02E	ARRG'T 55G - MK. IV WINCH
7	MASECO A-301-H	GENERAL ARRG'T 30'x10'x4'-4" PLASTIC LIFEBOAT - HAND PROPELLED
6	H-4650-231-00-02	RAILS & STANCHIONS - ARRGT & DETS. CABIN DECK & ABOVE
5	129-04-16	ENCL. BHDS. & FASHION PLTS. - CABIN DK.
4	129-04-10	SUN DK. PLTG. & GDRS.
3	H-4650-129-04-09	CABIN DK. PLTG & GDRS.
2	STD. 129-01-49	STRUCTURAL DETAILS
1	STD. 129-00-1	WELDING DETAILS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	6/8/77	1	1. GEN NOTE #7 CHANGED TO READ (BOAT WINCH TYPE, MASECO 55G - MK IV	JM	
		1	2. ADDED MAX WORKING LOAD PER DAVIT ARM & MAX WORK LOAD PER FALL		
		1	3. ADDED WEIGHT TO LIFEBOAT CAPACITY & WEIGHT NOTES. ALL ABOVE IN ACCORDANCE WITH G.G.S. LETTER DATED 6-2-77		TJM 6/13
2	4 6 78	3, 4	1. FLOOD LIGHT SUPPORT LOCATED ON CABIN DK. DELETED, SEE 3-A & 4-A	J W B	
			2. FLOOD LIGHT SUPPORT ON BRIDGE DK RELOCATED FROM 6" AFT FR. 164, 46'-8" OFF ℄ TO 6" AFT FR. 164, 47'-4" OFF ℄ P/S SEE		
		3, 5, 6	3-B, 5-B, 6-A & 6-B1		
			3. RESERVATION #1, INCLUDING L.M. ITEMS		
		1, 2	#14, 18, 25, 26, 28, 79, DET 3-C & WELDING LABEL DELETED		
		1	4. L.M. ITEM NO. 1 DECREASED FROM 30' TO 23'.		
		1	L.M. ITEMS No. 14, 18 & 28 REVISED FROM 1/2" TO 3/8" DIA. BOLTS, NUTS & LOCK WASHERS & QUANTITY DECREASED FROM 12 TO 6.		TJM
		1	L.M. ITEM No. 73 QUAN. DEC. FROM 6 TO 4		
		1	L.M. ITEM No. 74 QUAN. DEC. FROM 10 TO 4		
		1	L.M. ITEM No. 79 REV. FROM 4 1/2" DIA x 15.32# PL TO 5 1/4"x4 7/8"x15.32# PL & QUAN. DEC. FROM 4 TO 2		
		1	L.M. ITEM No. 80 QUAN. DEC. FROM 4 TO 2		
		1	5. REF. #18 ADDED (ABV. PER DEVELOPMENT)		
3	6/12/78	1	1. IN USCG APP'LS. CHANGED BREAKING STRENGTH OF BOAT FALLS FROM 31,600 LBS. TO 33,000 LBS & ADDED USCG APPV'L FOR WINCH (PER USCG REQMTS)	JTS	TJM 6/13/78
4.	11/25/79	12	1. ADDED DETAIL "12-D" COVER PLTS FOR SPLIT PIPE TROUGH.		
		11, 12	2. REVISED PLAN "11-C", SECT "11-D", DETS "12-B" & "12-C" TO SUIT ITEM No. 1 ABV.		
		4	3. ADDED DETS "4-B" & "4-F", RAISED PLATFORM.		
		3, 4	4. REVISED PLAN VIEW "3-A" & ELEV. "4-A" TO SUIT ITEM No. 3 ABV.	J. L.	
		9	5. ADDED DET "9-F" & SECT "9-G", RUNGS.		
		9	6. REVISED ELEV'N "9-A" & SECT "9-E" TO SUIT ITEM No. 5 ABV.		TJM
		2	7. IN B/M ADDED ITEMS No. 86 TO 93. ABV ITEMS PER THE FOLLOWING V.I.S'S: H-4650-21-1044 - 10/9/79 H-4650-21-1045 - 10/2/79 H-4650-21-1050 - 10/9/79		11/5/9

USCG 6-23-77
USCG 9-21-78
USCG 1-7-80

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 233

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN. DATE 4 MAY 1977
DRAWN CB/JWB IN CHARGE
CHECKED EXAMINED T.J. Mullin
REVIEW 21-1 DEPT. 4/26/77 APPROVED

PLAN NO. H-4650-233-00-01 ALT. NO. 4

BOAT HANDLING
ARRGT & DETAILS

APPROVAL LETTERS					
HULL 4650-1					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-2-77				
A.B.S.					
U.S.C.G.	6-23-77				
LLOYD'S R.S.					
U.S.P.H.S.					

UNIT No. 9580

O.D. MKS.	DATE
32, 38, 39, 39-1, 40, 40-1, 41, 42, 47, 49, 51, 53, 54, 55, 55-1, 56, 61, 62, 65, 66, 67, 70, 76, 77, 78, 81	4-4-78 5-26-78 4-23-79 12-14-79

	DATE OF ISSUE								
ALTERATION	—	—	1	1	2	2	2	3	4
ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OWNERS		2	2		2			2	2
AMERICAN BUREAU									
LLOYD'S R.S.									
U.S.M.A.									
U.S NAVY									
U.S.C.G.		3	3		3			3	3
JOINER CONT'R.									
OWNER'S INSP.		1	1		1		1		
AM. BU. INSP.									
LLOYD'S INSP.									
U.S.M.A. INSP.			1		1		1		
U.S. NAVY INSP.									
U.S.C.G. INSP.						1		1	1
COSCHOOP						1		1	1
HULL DRAFT. - 21				18		1	1	1	1
MACH. DRAFT. - 22				[illegible]		2		2	2
ELEC. DRAFT. - 23				[illegible]		1		1	1
OUTFIT. DRAFT. - 25									
ESTIMATING									
WAWOOD	18			18		1		1	1
PRODUCTION (BCD)									
ORDER DEPT.									
JOINER CONT. YARD									
TOTAL ENG'R. DIST.	2	8	7	5	7	7	3	12	12
YARD DISTRIBUTION		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
UAO-OFFICE					1	1	1	1	
FMcNAIR		18		18	1	1	1	1	
PIECE RATE - 11				18	1	1	1	1	
TEST DEPARTMENT									
SHIP SUPT					1	1	1	1	
PLANNING				18	1	1	1	1	
GROUND ASSEMBLY					2	2	2	2	
35 DEPT.					2	2	2	2	
H. LEVY					1	1	1	/	
QUALITY ASSURANCE					1	1	1	/	
NO. WAY									
NO. WAY									
NO. WAY									
NO. WAY									
STRUCT. SUPER.					2	2	2	2	
OPTICAL DETAIL - 46			1	8	2	2	2	2	
WET DOCK									
PIPE SHOP - 52									
OUTFIT. #1 PIER					1	1	1	1	
PIPE DRAFT. - 52					2	2	2	2	
BOILER SHOP - 58									
OUTSIDE MACH. - 60					2	2	2	3	
Q-MATIC					1	1	1	1	
ELECTRIC SHOP - 70									
SHEET MET. SHOP - 74									
COPPER SHOP - 51									
PAINT SHOP - 78					1	1	1	1	
WELDING									
RIGGING DEPT.					1	4	4	4	
MOLD LOFT - 41					1	1	1	1	
BRACKET SHOP									
D. MILLER								1	
TOTAL YARD DIST.	/	2	1	5	24	[illegible]	[illegible]	26	

ALT. 3
ALT. 2
ALT. 3
ALT. 4

H-528

32 30 FT.

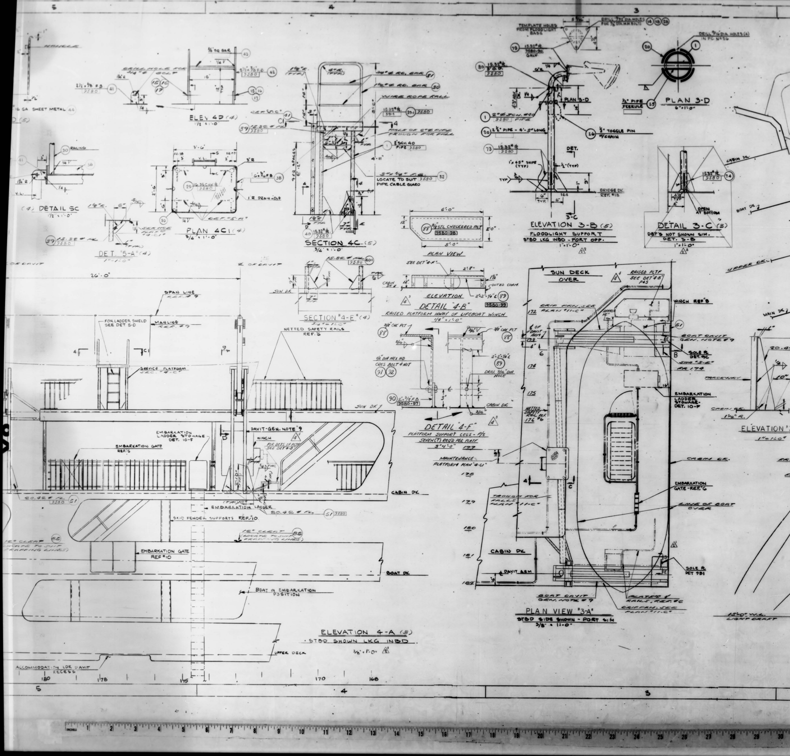
SCHED SHIP & PRE-ISSUE 4-18-7

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

BUILDERS PLAN NO. H-4650-233-00-01

FRAME 1 OF 6


ELEV 4D (4)
1/2" = 1'-0"
(4) DETAIL 5C
1/2" = 1'-0"
PLAN 4C1 (4)
3/4" = 1'-0"
DET. "5-A" (4)
1" = 1'-0"
SECTION 4C (5)
3/4" = 1'-0"
WIRE ROPE RAIL
LOCATE TO SUIT 3580 PIPE CABLE GUARD
SECTION "4-E" (4)
PLAN VIEW
ELEVATION
DETAIL "4-B"
RAISED PLATFORM INWD OF LIFEBOAT WINCH
DETAIL "4-F"
PLATFORM SUPPORT LEGS - P/S
SEVEN (7) REQ'D PER PLATF
3" = 1'-0"
ELEVATION 3-B (5)
FLOODLIGHT SUPPORT
STBD LKG INBD - PORT OPP.
1" = 1'-0"
TEMPLATE HOLES FROM FLOODLIGHT BASE
PLAN 3-D
6" = 1'-0"
1/2" PIPE FERRULE
1/2" TOGGLE PIN W/CHAIN
BRIDGE DK
DETAIL 3-C (5)
DET'S NOT SHOWN SIM. DET. 3-B
1" = 1'-0"
OPEN AT BOTTOM
SUN DECK OVER
RAISED PLTF SEE DET "4-B"
WINCH REF 8
BOAT DAVIT GEN. NOTE 9
EMBARKATION LADDER STOWAGE - DET. 10-F
EMBARKATION GATE - REF. 6
LINE OF BOAT OVER
TROUGH FOR FALLS - PLAN "11-C"
MAINTENANCE PLATFORM PLAN "4-C1"
NETTED SAFETY RAIL REF. 6
CABIN DK
DAVIT ARM
SOLE PL DET 9B1
PLAN VIEW "3-A"
STBD SIDE SHOWN - PORT SIM
3/8" = 1'-0"
26'-0"
SPAN LINE REF. 9
MAN LINE REF. 7
FOR LADDER SHIELD SEE DET 5-D
NETTED SAFETY RAILS REF. 6
SERVICE PLATFORM SEC. "4-C"
SUN DK
EMBARKATION LADDER STOWAGE DET. 10-F
DAVIT - GEN. NOTE 9
EMBARKATION GATE REF. 6
WINCH
CABIN DK
EMBARKATION LADDER
SKID FENDER SUPPORTS REF. 10
EMBARKATION GATE REF 10
BOAT DK
BOAT IN EMBARKATION POSITION
UPPER DECK
ACCOMMODATION LDR DAVIT RECESS
180
178
175
170
168
ELEVATION 4-A (5)
STBD SHOWN LKG INBD
3/8" = 1'-0"
ELEVATION "3-E"
1" = 1'-0"
TRACKWAY
CABIN DK
SUN DK
BOAT DK
UPPER DK
MAIN DK
ACCOMODATION LADDER
FR. 180
FR. 179
7'-0"
12'-0" W.L. LIGHT DRAFT
ELEVATION "2-A"
SHOWING SHIP AT 15° LIST
STB'D SHOWN LK'G FWD.
1/4" = 1'-0"
5
4
3
2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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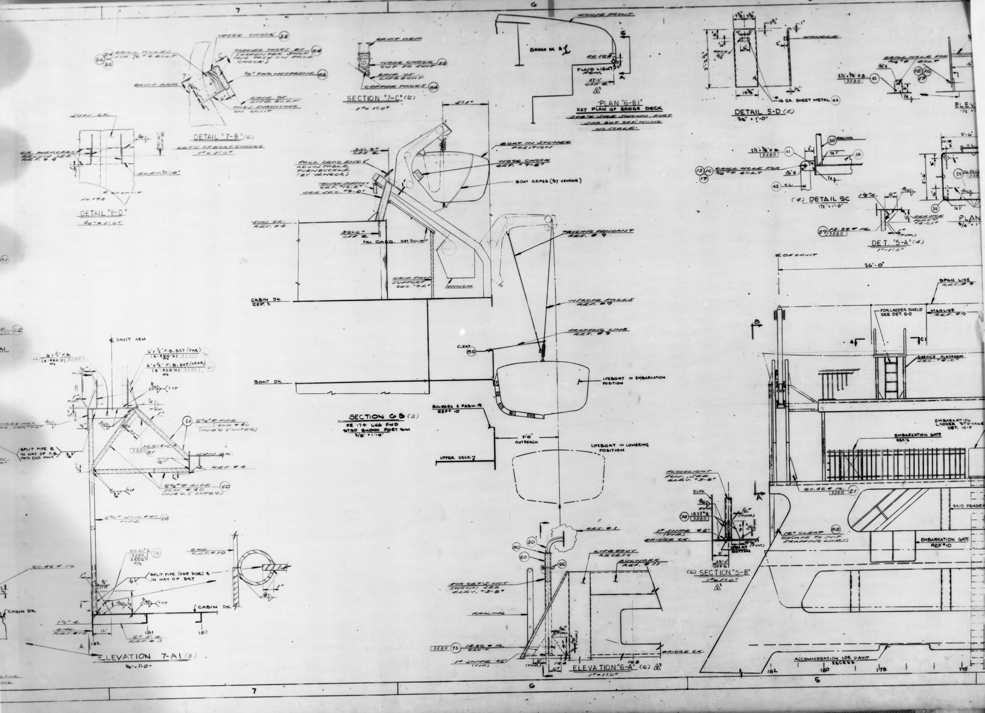
FRAME 2 OF 6



7
6
5
WOOD CHOCK 33
DRILL HOLES FOR 1/2" Ø BOLT 34 35 36
COPPER TACKS BY CARPENTER SHOP (NO TACK ON FACE CHOCK) 84
1/8" THK NEOPRENE 83
DAVIT ARM
LINE OF LIFE BOAT
PADS FURNISHED ON DAVIT
DETAIL "7-B" (6)
DET'S OF BOAT CHOCKS
1" = 1'-0"
DAVIT ARM
WOOD CHOCK CUT TO SUIT 33
LINE OF LIFEBOAT
COPPER TACKS 84
SECTION "7-C" (6)
1" = 1'-0"
SUN DK.
DK. HEADERS BELOW SEE REF. # 4
ELEV. "8-B"
℄ OF DAVIT
FR 173
DETAIL "8-D"
1/4" = 1'-0"
HOUSE FRONT
BRIDGE DK #1
FR 164
FLOOD LIGHT FDN.
47'-4" OFF ℄
PLAN "6-B1"
KEY PLAN OF BRIDGE DECK
STB'D SIDE SHOWN, PORT SIM BUT OPP HAND
NO SCALE
16 GA. SHEET METAL 44
HANDLE
DETAIL 5-D (5)
3/4" = 1'-0"
DRILL HOLE FOR 3/4" Ø BOLT 15 16 17
2 1/2" × 3/8" F.B. 9580 41
ELEV
RAILING 30
38
42 V.L.
(4) DETAIL SC
1 1/2" = 1'-0"
39 15.32# PL 9580
SERVICE PLAT'M "4-C1"
DET. "5-A" (4)
1" = 1'-0"
PLAN
3/4" = 1'
BOAT IN STOWED POSITION
WOOD CHOCK DET. "7-B"
BOAT GRIPES (BY VENDOR)
33'-9" OFF ℄
FALL DEAD END & ADJUSTABLE TURNBUCKLE (BY VENDOR)
TROUGH SUPPORT DET. "12-B" SEE SEC. "9-D"
SUN DK. REF. # 4
32'-6" OFF ℄
FALL GUARD. DET "10-A"
DRIP PAN SUPPORT SEC. "7-E"
WINCH
5'-1"
TRICING PENDANT REF. # 9
CABIN DK REF. 3
W/ROPE FALLS REF. # 9
FRAPPING LINE REF. # 9
CLEAT 85
LIFEBOAT IN EMBARKATION POSITION
BOAT DK
SECTION 6B (3)
FR 174 LKG FWD
STBD SHOWN PORT SIM
3/8" = 1'-0"
BULWARK & FASH. R REF 10
7'-0" OUTREACH
UPPER DECK
LIFEBOAT IN LOWERING POSITION
℄ DAVIT ARM
6" × 1/2" F.B. (4-REQ'D) 9580 P/S 62
6" × 1/2" F.B. BKT (FAR) (4-REQ'D) 9580 P/S 76
6" × 1/2" F.B. BKT (NEAR) (4-REQ'D) 9580 P/S 61
2 1/2" Ø PIPE SCH #40 (INS'D & OUTS'D) 20
SPLIT PIPE ℄ IN WAY OF F.B. THIS END ONLY
SUN DK.
REF. # 4
2 1/2" SCH #40 PIPE 20
20.40# PL 9580 4 REQ'D P/S 78
SPLIT PIPE (ONE SIDE) ℄ IN WAY OF BKT
CABIN DK
20.46# PL
1 1/2" R.
6" F.B.
REF. # 3
182
181
180
ELEVATION 7-A1 (3)
3/4" = 1'-0"
REF. # 1
30
80
20
26
LIFEBOUY RECESS
BULWARK REF. # 11
FOR DET'S NOT SHOWN SEE ELEV. "5-B"
RAILING
9580 73 15.32# PL BRK'T.
1" SNIPE 45° (TYP.)
BRIDGE DK.
164
163
ELEVATION "6-A" (6)
1" = 1'-0"
FLOODLIGHT FDN. SEE ELEV. "5-B"
BLWK
74 15.32# PL 9580
1" SNIPE 45° (TYP.)
BRIDGE DK.
OPEN AT BOTTOM
48'-0" OFF ℄
(6) SECTION "5-B"
1" = 1'-0"
℄ OF DAVIT
26'-0"
SPAN LINE REF. # 9
FOR LADDER SHIELD SEE DET. 5-D
MANLINE REF. # 9
SERVICE PLATFORM SEC. "4-C"
EMBARKATION LADDER STOWAGE DET. 10-F
EMBARKATION GATE REF. 6
20.42# PL 9580 51
SKID FENDER
12" CLEAT (LOCATE TO SUIT FRAPPING LINES) 85
EMBARKATION GATE REF #10
ACCOMMODATION LDR DAVIT RECESS
182
180
178
175

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
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Oct 1980

BUILDERS PLAN NO. H-4650-233-00-01

FRAME 3 OF 6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-233-00-01

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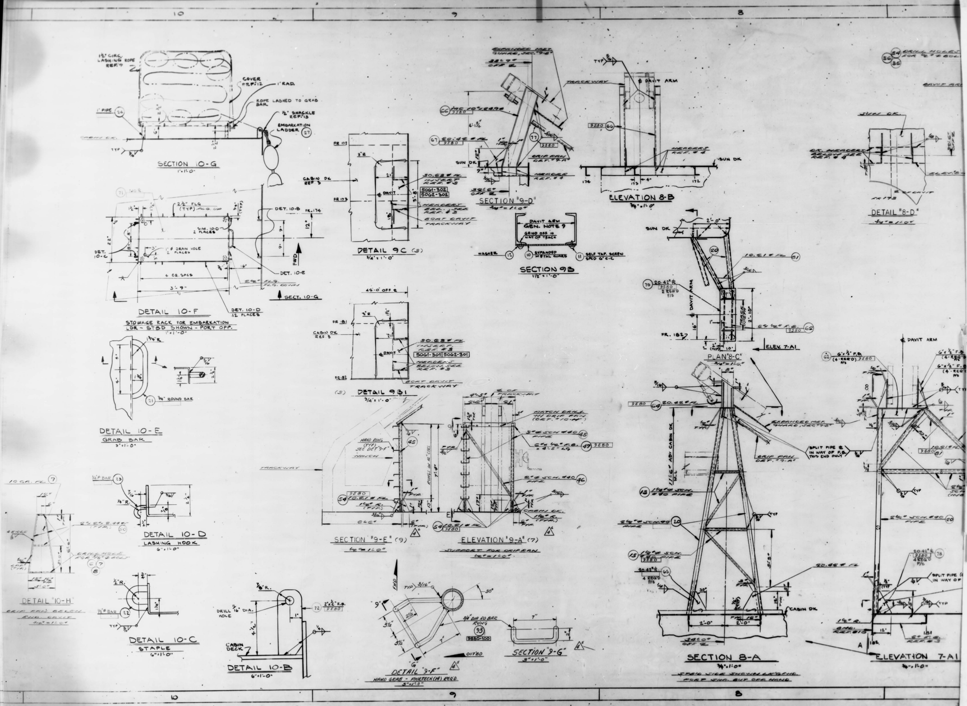
FRAME 4 OF 6

8X



10
9
8
SECTION 10-G
1"=1'-0"
1½" CIRC. LASHING ROPE REF. 7
COVER REF. 12
1" RAD.
ROPE LASHED TO GRAB BAR
½" SHACKLE REF. 13
EMBARKATION LADDER
1" PIPE
CABIN DK.
DETAIL 10-F
STOWAGE RACK FOR EMBARKATION LDR - STBD SHOWN - PORT OPP.
1"=1'-0"
DET. 10-B
DET. 10-C
DET. 10-E
DET. 10-D 12 PLACES
SECT. 10-G
1" ⌀ DRAIN HOLE 2 PLACES
SIM. 10-D 2 PLACES
4 EQ. SPCS
3'-9"
FWD
DETAIL 10-E
GRAB BAR
3"=1'-0"
¾" ROUND BAR
DETAIL 10-D
LASHING HOOK
6"=1'-0"
DETAIL "10-H"
DRIP PAN BELOW END DAVIT
DETAIL 10-C
STAPLE
6"=1'-0"
DETAIL 10-B
6"=1'-0"
DRILL 1/16" DIA. HOLE
CABIN DECK
DETAIL 9C (3)
3/4"=1'-0"
CABIN DK REF. 3
30.63# FL INSERT REF. #3
5061-302
5062-302
HEADERS BELOW SEE REF. #3
BOAT DAVIT TRACKWAY
DETAIL 9B1
3/4"=1'-0"
5061-301
5062-301
45'-0" OFF ℄
SECTION "9-D"
3/4"=1'-0"
SUN DK
DRIP PAN DET. "9-A"
HEADER REF. #4
ELEVATION 8-B
3/4"=1'-0"
℄ DAVIT ARM
HEADERS REF. #4
SUN DK
SECTION 9B
1½"=1'-0"
DAVIT ARM
GEN. NOTE 9
GRIND OFF IN WAY OF TRACK
WASHER
EXPANDED METAL GUARD
SELF TAP. SCREW SPCD 6" C-C
SECTION "9-E" (9)
¾"=1'-0"
HAND RUNG (TYP) SEE DET "9-F"
TRACKWAY
ELEVATION "9-A" (7)
SUPPORT FOR DRIP PAN
½"=1'-0"
MATCH DRILL W/ DRIP PAN (DET. "10-H")
3" ⌀ SCH. #40 PIPE
2" ⌀ SCH. #40 PIPE
CABIN DK.
DETAIL "9-F"
HAND GRAB - FOURTEEN (14) REQD.
3"=1'-0"
¾" DIA RD BAR RUNG
9580-100
SECTION "9-G"
3"=1'-0"
OUTB'D
PLAN "8-C"
¾"=1'-0"
SUN DK
DAVIT ARM
FR. 182
ELEV. 7-A1
SECTION 8-A
¾"=1'-0"
STBD SIDE SHOWN LOOKING FWD. PORT SIM. BUT OPP. HAND
EXPANDED METAL GUARD, SEC. "9-B"
DRIP PAN DET. "9-A"
17'-6" ABV. CABIN DK.
CABIN DK.
20.45# FL
SPLIT PIPE ℄ IN WAY OF F.B. THIS END ONLY
ELEVATION 7-A1
¾"=1'-0"
℄ DAVIT ARM
DETAIL "8-D"
¾"=1'-0"
SUN DK.
FR 173

	WELDING	11/14/78
	…ller Metal in Accordance with the Following Table:	
	WHEN WELDING TO THIS STEEL	USE FILLER METAL
	I	1, 2, 3, 4, 6, 8
	II	2, 4, 6, 8
	I	2, 4, 6, 8
	II	*2, 4, 5, 7, 8, 9
	III	10
	II	2
	II	11

PEC.	PROCEDURE NO.
6011	CWE 101 SMAW
7018	CWE 101 SMAW
6027	CWE 101 SMAW
	CWE 105 SMAW (Gravity)
7024	CWE 101 SMAW
	CWE 105 SMAW (Gravity)
8018C3	CWE 101 SMAW
	CWE 209 FCAW (Fluxcore C-25)
	CWE 209 FCAW
	CWE 301 SAW (Single)
	CWE 302 – CWE 303 SAW (Multiple)
	CWE 207 FCAW (Fluxcore CO_2)
9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
E310	CWE 110 SMAW

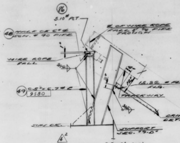
STEEL CODE

MA MB
AH DH EH
A-514
STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

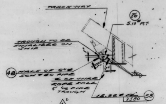
DESCRIPTION

…l Plates and Shapes ABS Grade "A"
…l Plates and Shapes ABS Grade "B"
…ngth Steel Plates and Shapes ABS Grade "AH"
…ngth Steel Plates and Shapes ABS Grade "DH"
…ngth Steel Plates and Shapes ABS Grade "EH"
…AH, DH and EH are AH36, DH36 and EH36 Quality Steels.
… EH to EH use 8018C3
… to High Strength use 8018C3

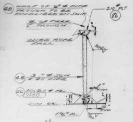

86
5.10# PLT.
48 HALF OF 6" ⌀ SCH. # 40 PIPE
℄ OF WIRE ROPE FALL & ½ PIPE TROUGH
WIRE ROPE FALL
3/16
49 C5"x6.7# C
9580
15.32 # PL. FLG.
77 9580
TRACKWAY
3/16
DRIP PAN DET. "10-H"
SUN DK.
SUPPORT SEC. "9-D"
4 2

DETAIL "12-C" (11)

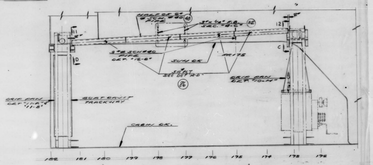
END SUPPORT FOR TROUGH
3/4" = 1'-0"


TRACKWAY
86
5.10# PLT.
TROUGH TO BE FINALIZED ON SHIP
48 HALF OF 6" ⌀ SCH # 40 PIPE
℄ OF WIRE ROPE FALL & ½ PIPE TROUGH
15.32 # PL.
9580 53
3/16
4 2

SECTION "11-D" (11)
3/4" = 1'-0"

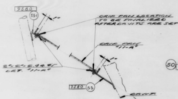

48 HALF OF 6" ⌀ PIPE TROUGH TO BE FINALIZED ON SHIP
5.10# PLT
86
℄ OF FALL & TROUGH
WIRE ROPE FALL
3/16
45 3" ⌀ SCH # 40 PIPE
56 10.21 # PL.
9580
SUN DK.
1½" R.
TYP.
4 2

DETAIL "12-B" (11)
3/4" = 1'-0"

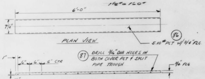

HALF OF 6" ⌀ SCH. # 40 PIPE 48
3"x¼" F.B. SEC. "9-C" 32
12
2"
11
2"
C
D
3" ⌀ SCH # 40 PIPE DET. "12-B"
SUN DK
FR 175
5.10# PLT SEE DET "12-D"
86
DRIP PAN DET. "10-H"
DRIP PAN DET "11-A" & "11-B"
BOAT DAVIT TRACKWAY
CABIN DK.
182 181 180 179 178 177 176 175 174 173 172
4 2

PLAN "11-C" (3)

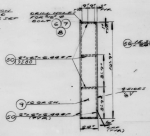
DET'S OF TROUGH FOR FALLS & DRIP PANS
(OMITTED INDICATION OF BOAT & DAVIT)
3/8" = 1'-0"


9580
55-1
1"
DRIP PAN LOCATION TO BE FINALIZED AFTER DAVITS ARE SET
DRIP PAN "11-A"
2"x2"x2.44# L DET. "11-A"
1"
9580 55
DAVIT

DETAIL "12-A" (11)
1½" = 1'-0"

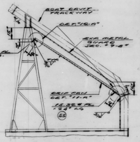

6'-0"
7¼"
PLAN VIEW
86
5.10# PLT w/ 3/4" FLG.
87 DRILL 3/16" DIA HOLES IN BOTH COVER PLT & SPLIT PIPE TROUGH
1"
6" 6" 6" CTR
3/4" FLG
1/4"
ELEVATION
4 1

DETAIL "12-D"
5.10# COVER PLAT FOR CABLE TROUGH
EIGHT (8) REQ'D - FOUR (4) PORT & FOUR (4) STB'D
1" = 1'-0"


9" 9" 3" TYP.
DRILL HOLES FOR 3/8" ⌀ BOLT
6 7 8
1" TYP.
50 2"x2"x2.44# L
9580
3'-9"
10'-9"
4 SIDES 1/8
9 10 GA SH.
50 2"x2"x2.44# L (TYP.)
3'-9"
24"
1/2" LAP (TYP.)

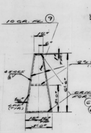
DETAIL "11-A" (11)

DRIP PAN BELOW AFT. DAVIT
3/8" = 1'-0"


BOAT DAVIT TRACKWAY
DET. "10-A"
15"
3"
55 15.32# PL. x 24" LG.
EXP. METAL GUARD SEC. "9-B"
TYP. 3/16
DRIP PAN DET. "11-A"
15.32# PL. x 24" LG.
55
3/16
2"
15"

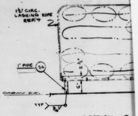
DETAIL "11-B" (11)

STB'D SIDE SHOWN LK'G FWD
PORT SIM BUT OPP. HAND
3/8" = 1'-0"

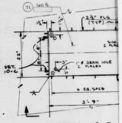

10 GA. PL. 9
12"
6"
1" TYP.
2"x2"x2.44# L (TYP.) 50
4 SIDES 1/8
6'-6"
3'-0"
DRILL HOLE FOR 3/8" ⌀ BOLT
6 7 8
1/2" LAP (TYP.)
18" 18" TYP.
3'-0"

DETAIL "10-H"

DRIP PAN BELOW FWD. DAVIT
3/8" = 1'-0"

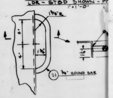

1½" CIRC. LASHING ROPE REF. 9
1" PIPE 24
2½"
6"
CABIN DK.
TYP 3/16

SECTION 10-
1" = 1'-0"

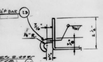

71 5.10 PL.
1½"
1½"
2½" FLG (TYP)
SIM. 2 PLACES
8"
8"
22"
DET. 10-C
3"
1" ⌀ DRAIN HOLE 2 PLACES
4 EQ. SPCS
3'-9"

DETAIL 10-F

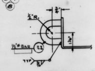
STOWAGE RACK FOR EMBA…
LDR - STBD SHOWN - P…
1" = 1'-0"


1¾" R.
4"
4"
1¾"
21 3/4" ROUND BAR

DETAIL 10-E
GRAB BAR
3" = 1'-0"


1/4" ⌀ BAR 23
7/16"
1/4" R.
3/16
2¼"
1/2"

DETAIL 10-D
LASHING HOOK
6" = 1'-0"


3/4"
1/2" R.
1½" ⌀ BAR 22
1¾"
TYP 3/16

DETAIL 10-C
STAPLE
6" = 1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

BUILDERS PLAN NO. H-4650-233-00-01

FRAME 5 OF 6

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING

THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C-25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860-0 Flux)		CWE 301 SAW (Single) CWE 302 - CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

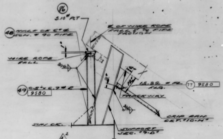
- I MATERIAL DESIGNATION, MA MB
- II MATERIAL DESIGNATION, AH DH EH
- III MATERIAL DESIGNATION, A-514
- IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

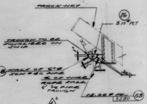
* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3


86
5.10# PLT
48 HALF OF 6" Ø SCH. # 40 PIPE
℄ OF WIRE ROPE FALL & ½ PIPE TROUGH
WIRE ROPE FALL
3/16
49 C5"×6.7# C
9580
15.32 # PL. FLG.
77 9580
TRACKWAY
DRIP PAN DET. "10-H"
SUN DK.
SUPPORT SEC. "9-D"
4 2

DETAIL "12-C" (11)

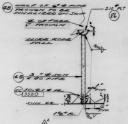
END SUPPORT FOR TROUGH

3/4" = 1'-0"


TRACKWAY
86
5.10# PLT
TROUGH TO BE FINALIZED ON SHIP
48 HALF OF 6" Ø SCH # 40 PIPE
℄ OF WIRE ROPE FALL & ½ PIPE TROUGH
15.32 # PL.
9580
55
3/16
4 2

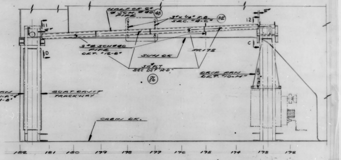
SECTION "11-D" (11)

3/4" = 1'-0"


48 HALF OF 6" Ø PIPE TROUGH TO BE FINALIZED ON SHIP
5.10# PLT
86
℄ OF FALL & TROUGH
WIRE ROPE FALL
3/16
45 3" Ø SCH # 40 PIPE
56 10.21 # PL.
9580
SUN DK.
1" TYP.
6" TYP.
1½" R.
4 2

DETAIL "12-B" (11)

3/4" = 1'-0"

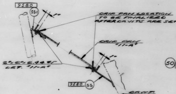

HALF OF 6" Ø SCH. # 40 PIPE
48
3"×¼" F.B. SEC. "4-C"
32
11
2"
12
C
D
3" Ø SCH # 40 PIPE DET. "12-B"
SUN DK
FR 175
5.10# PLT SEE DET "12-D"
86
DRIP PAN DET. "10-H"
DRIP PAN DET "11-A" & "11-B"
BOAT DAVIT TRACKWAY
CABIN DK.
182
181
180
179
178
177
176
175
174
173
172
4 2

PLAN "11-C" (3)

DET'S OF TROUGH FOR FALLS & DRIP PANS

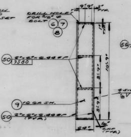
(OMITTED INDICATION OF BOAT & DAVIT)

3/8" = 1'-0"


9580
55-1
1"
DRIP PAN LOCATION TO BE FINALIZED AFTER DAVITS ARE SET
DRIP PAN "11-A"
2"×2"×2.44# L DET. "11-A"
9580
55
DAVIT

DETAIL "12-A" (11)

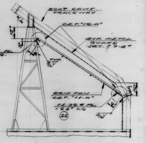
1½" = 1'-0"


DRILL HOLES FOR 3/8" Ø BOLT
6 7 8
9" 9" TYP.
3" TYP.
1" TYP.
50 2"×2"×2.44# L
9580
10'-9"
3'-9"
3'-9"
4 SIDES 1/8
9 10 GA SH.
50 2"×2"×2.44# L (TYP.)
24"
1/2" LAP (TYP.)

DETAIL "11-A" (11)

DRIP PAN BELOW AFT. DAVIT

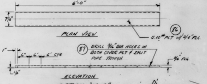
3/8" = 1'-0"


BOAT DAVIT TRACKWAY
DET. "10-A"
15"
3"
55 15.32# PL. × 24" LG.
EXP. METAL GUARD SEC. "7-B"
3/16 TYP.
DRIP PAN DET. "11-A"
15.32# PL. × 24" LG
55
15"
10"
3/16

DETAIL "11-B" (11)

STB'D SIDE SHOWN LK'G FWD PORT SIM BUT OPP. HAND

3/8" = 1'-0"


6'-0"
7¼"
PLAN VIEW
86
5.10# PLT W/ ¾" FLG.
87 DRILL 3/16" DIA HOLES IN BOTH COVER PLT & SPLIT PIPE TROUGH
1"
6" 6" 6" CTR
¾" FLG
1/4"
ELEVATION
4 1

DETAIL "12-D"

5.10# COVER PLAT FOR CABLE TROUGH

EIGHT (8) REQ'D - FOUR (4) PORT & FOUR (4) STB'D

1" = 1'-0"

8X

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

BUILDERS PLAN NO. H-4650-233-00-01

FRAME 6 OF 6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. H-4650-234-00-01

FRAME 1 OF 5

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 234

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 10-6-77
DRAWN JTB
IN CHARGE
CHECKED VHT
EXAMINED T. L. Muller
REVIEW RJK
APPROVED

PLAN NO. 4650-234-00-01
ALT. NO. 8³

UAO-50554
REQN-21-500127

DECK COVERING SCHEDULE

SHEET 1 OF 16

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-9-77 8-11-78				
A.B.S.					
U.S.C.G.	10-26-77				
LLOYD'S R.S.					
U.S.P.H.S.	10-17-77				

H-529

49974 (Rev.8 11-79)

WELDING

11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC.		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C–25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860–0 Flux)		CWE 301 SAW (Single) CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

I MATERIAL DESIGNATION, MA MB
II MATERIAL DESIGNATION, AH DH EH
III MATERIAL DESIGNATION, A–514
IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 2 OF 16

	DATE OF ISSUE													
ALTERATION	–	–	1²	1²	2⁶	2⁶	3¹	4¹	4¹	5²	5²	6¹	7³	8³
ENGINEERING DISTRIBUTION	10/6/77	10/6/77	3/21/78	3/23/78	7/17/78	7/21/78	8/16/78	11/6/78	11/9/78	4/2/79	4/4/79	8/31/79	9/18/79	12/9/79
MAIL: OWNERS	4		2		4		2	2		2		2	2	2
MAIL: AMERICAN BUREAU														
MAIL: LLOYD'S R.S.														
MAIL: U.S.M.A.														
MAIL: U.S NAVY														
MAIL: U.S.C.G.	3		3		3		3	3		3		3	3	3
MAIL: JOINER CONT'R.			1		1		1	1		1		1	1	1
MAIL: USPH	3		3		3		3	3		3		3	3	3
INSPECTION: OWNER'S INSP.	1		1		1			1		1				
INSPECTION: AM. BU. INSP.														
INSPECTION: LLOYD'S INSP.														
INSPECTION: U.S.M.A. INSP.			1		1			1		1				
INSPECTION: U.S. NAVY INSP.														
INSPECTION: U.S.C.G. INSP.				1		1	1		1		1	1	1	
INSPECTION: CD SCHAUB				1		1	1		1		1	1	1	1
OFFICE: HULL DRAFT.- 21		1P		1		1	1		1		1	1	1	1
OFFICE: MACH. DRAFT.- 22		2P		2		2	2		2		2	2	2	2
OFFICE: ELEC. DRAFT.- 23		1P		1		1	1		1		1	1	1	1
OFFICE: OUTFIT. DRAFT.- 25														
OFFICE: STEIGERWALD								1	1	1		1	1	1
OFFICE: PURCHASING	4P													
MISC.: PRODUCTION (BCD)														
MISC.: ORDER DEPT.														
MISC.: JOINER CONT. YARD								1		1				
MISC.: 21-1-Dave Wood		1P		1		1	1				1	1	1	1
TOTAL ENG'R. DIST.	15	5	11	7	13	7	16	13	7	13	7	17	17	16

YARD DISTRIBUTION	10/6/77	10/6/77	3/29/78	7/15/78	8/17/78	11/17/78	4/5/79	9/5/79		12/10/79
YARD: HAO-OFFICE			1	1	1	1	1	1	1	1
YARD: P McNair	2P		1	1	1	1	1	/	/	
YARD: PIECE RATE - 11		1P	1	1	1	1	1	1	1	1
YARD: TEST DEPARTMENT										
YARD: J. Simmons			1	1	1	1	1	1	1	1
YARD: PLANNING		1P	1	1	1	1	1	1	1	1
STRUCTURAL: GROUND ASSEMBLY			2	4	4	4	4	4	4	4
STRUCTURAL: 35 Dept			2	2	2	2	2	2	2	2
STRUCTURAL: H. Levy			1	1	1	1	1	/	/	
STRUCTURAL: Quality Assurance			1	1	1	1	1	/	/	
STRUCTURAL: NO. WAY										
STRUCTURAL: NO. WAY										
STRUCTURAL: NO. WAY										
STRUCTURAL: NO. WAY										
STRUCTURAL: STRUCT. SUPER.			2	2	2	2	2	2	2	2
STRUCTURAL: OPTICAL DETAIL-45		2P	2	2	2	2	2	2	2	2
STRUCTURAL: WET DOCK										
MACH'Y & OUTFIT.: PIPE SHOP - 52			1	1	1	1	1	1	1	1
MACH'Y & OUTFIT.: OUTFIT. #1 PIER			1	1	1	1	1	1	1	1
MACH'Y & OUTFIT.: PIPE DRAFT. - 52			2	2	2	2	2	2	2	2
MACH'Y & OUTFIT.: BOILER SHOP - 58			1	1	1	1	1	1	1	1
MACH'Y & OUTFIT.: OUTSIDE MACH. - 60			1	2	2	2	2	2	2	2
MACH'Y & OUTFIT.: Q-Mail			1	2	2	2	2	2	2	2
MACH'Y & OUTFIT.: ELECTRIC SHOP - 70			1	1	1	1	1	1	1	1
MACH'Y & OUTFIT.: SHEET MET. SHOP - 74										
MACH'Y & OUTFIT.: COPPER SHOP - 51										
MACH'Y & OUTFIT.: PAINT SHOP - 75			1	1	1	1	1	1	1	1
OTHER: WELDING										
OTHER: Vendor's			4						4	
OTHER: MOLD LOFT - 41			1	1	1	1	1	1	1	1
OTHER: BRACKET SHOP										
OTHER: R. Miller								1	1	1
TOTAL YARD DIST.	2	4	24	28	28	29	29	27	31	27
			ALT 1²	ALT 2⁶	ALT 3¹	ALT 4¹	ALT 5²	ALT 6¹	ALT 7³	ALT 8³

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 3 OF 16

ALTERATIONS

Nº	DATE	SHEET	DESCRIPTION	MADE BY	APP'D.
1	3/13/78	4 & 5	1) IN GENERAL NOTES Nºs 8 & 12 ADDED NOTE FOR SUBMITTAL TO OWNER FOR APP'L. & ADDED NOTE Nº 22. GCS LETTER 11/9/77	R L W	TLM
		7	2) IN BILL OF MAT'L. ALTERED SIZE OF F.B. COAMINGS AT PcNºs 18 & 19 TO AGREE WITH JOINER PLAN.		J 3/21/8
2	6/28/78	6 GEN.	1) COLORS ADDED AS APP'D BY OWNER.	R L W	
		10	2) DELETED VINYL TILE IN CARD ROOM ON CABIN DK. & CARPET NOTED.		
		16	3) VINYL LISTED FOR INSIDE OF STAIR STRINGERS.		
		9	4) SHUFFLEBOARD MAT'L. REVISED FROM TERRAZZO TO LATEX MASTIC WITH PAINTED LINES & NUMBERS.		
		7	5) B/M REVISED AS FOLLOWS TO SUIT ABV. CHANGES 2² THRU 2⁴. ITEM Nº 3 DECREASED FROM 9,559# TO 9,408# 4 INCREASED 2,529# TO 2,680# 9 DECREASED 8,992# TO 8,841# 10 DECREASED 4,017'-0" TO 3969'-0" 11 INCREASED 952'-0" TO 1,000'-0" 13 INCREASED 8,777# TO 9,047# 17 DELETED 25 DECREASED FROM 215# TO 120# ABV. ALTERATIONS IN ACCORDANCE WITH REPORT OF MEETING WITH G. SHARP ON JUNE 8, 9 & 14TH.		
		16	6) IN ELEV. CAB ADDED NOTE FOR JOINER CARPET.		J 7/17/8
3	8/11/78	11	1) REVISED TYPE OF VINYL TILE IN CHIEF ENGR'S. OFFICE FROM MC-2 TO MC-3 TO SUIT JOINER CONT'RS. COLOR SCHEDULE.	R L W	TLM J 8/16/8
4	10/18/78	7	1) B/M REVISED AS FOLLOWS: ITEM #6 INCREASED FROM 169' TO 214', #15 712' TO 932', #18 520' TO 820', #19 180' TO 280' #22 7 TO 9 ABV. TO SUIT ALT. 4¹ ON REF. Nº 1	R L W	TLM J 11/1/8
5	3/27/79	12	1) ADDED STRUCT. VENT PLENUM AT BOAT DK. LEVEL WITH LATEX MASTIC AT BOTTOM OF PLENUM P/S.	R L W	RJK TLM
		7	2) B/M REVISED AS FOLLOWS: ITEM #13 INCREASED FROM 9047# TO 9305# ITEM #14 INCREASED FROM 1792' TO 1912'		J 4/2/9
6	8/22/79	7	1) IN B/M ADDED Pc Nº 26 TO AGREE WITH ALT. 6¹ ON REF. #1	R L W	TLM J 8/23/9
7	9/12/79	9	1) ADDED VENT PLENUM FRS 168-170(S) AT SUN DECK LEVEL WITH LATEX MASTIC AT BOTTOM OF PLENUM.	A H K	TLM
		16	2) ADDED MACH'Y SPACE-AIR INLET PLENUM TO MAIN DECK FRS 179-182 WITH LATEX MASTIC AT BOTTOM OF PLENUM.		
		7	3) B/M REVISED AS FOLLOWS: ITEM #13 INCREASED FROM 9305 TO 9544 SQ. FT. ITEM #14 INCREASED FROM 1912 TO 2014 L/F.		J 9/14/9

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FRAME 2 OF 5

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 3A OF 16

ALTERATIONS (CONT'D.)

Nº	DATE	SHEET	DESCRIPTION	MADE BY	APP'D
8	10/30/79	7	1) IN B/M, ADDED ITEMS 27 & 28.	A H K	JdM
		7A	2) ADDED SHEET 7A AND IN B/M ADDED ITEMS 29, 30 & 31.		JDM 11-31-79
		16	3) ADDED ENGINEERS WORKSHOP ON THE 36'-0" FLAT WITH MAGNESITE DECK COVERING IN WAY OF THE DIESEL OIL TANK.		11/5/9 Jam
			THE ABOVE ITEMS WERE ADDED TO SUIT THE ADDITION OF INSULATING MAGNESITE DECK COVERING IN THE ENGINEERS WORKSHOP ON THE 36'-0" FLAT TO PROTECT THE DIESEL OIL TANK BELOW & TO SUIT Y.I.S. NO. H4650-21-1060 AND DEPARTURE NO. 049.		

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 4 OF 16

GENERAL NOTES

1. FOR DETAILS OF APPLICATIONS SEE REF #1
2. DECK COVERING SHALL NOT BE INSTALLED UNTIL SURFACES HAVE BEEN PREPARED AND/OR COATED IN ACCORDANCE WITH PAINTING SCHEDULE, REF #2
3. DECK COVERING SHALL NOT BE LAID UNTIL ALL REQUIRED TESTING FOR WATER TIGHTNESS, FASTENING OF MACHINERY, EQUIPMENT, FURNITURE, ETC. HAS BEEN COMPLETED.
4. DECK COVERING SHALL NOT BE LAID UNDER BUILT-IN FURNITURE, BUT SCRIBE FITTED TO SUB BASES.
5. WHERE ADJACENT DECK COVERINGS ARE OF DIFFERENT THICKNESSES, THE UNDERLAYMENT FOR THE THINNER SHALL BE GRADUALLY INCREASED IN THICKNESS TO FINISH FLUSH WITH THE THICKER.
6. ALL DECK COVERING SHALL BE APPLIED AS RECOMMENDED BY THE MANUFACTURER.
7. ALL DECK COVERINGS SHALL BE THOROUGHLY CLEANED AFTER FINISHING AND WAXED OR OTHERWISE SEALED AS RECOMMENDED BY MFGR.
8. △1 FINISHED COLORS AND PATTERNS SHALL BE SELECTED FROM MANUFACTURER'S STANDARDS AND SUBMITTED TO OWNER FOR APP'L.
9. ALL COMPLETED DECK COVERING TO BE COVERED WITH A PROTECTIVE COVERING TO PREVENT INDENTATION OR WEAR PRIOR TO SHIP DELIVERY.
10. ALL WARDROBES SHALL HAVE THE SAME DECK COVERING AS THE ADJOINING ROOM.
11. QUANTITIES LISTED ARE APPROXIMATE. ACTUAL MEASUREMENTS ARE TO BE TAKEN FROM THE SHIP.
12. △1 SAMPLES, SIZE AND STYLE OF ALL DECK COVERING SHALL BE SUBMITTED TO OWNER FOR APPROVAL.
13. TROWEL APPLIED DECK COVERINGS SHALL NOT BE APPLIED WHEN AMBIENT TEMPERATURES ARE UNDER 40° OR OVER 90° F. RESILIENT TILES AND SHEET MATERIAL SHALL NOT BE APPLIED WHEN TEMPERATURES ARE UNDER 50° OR OVER 90° F.
14. ALL TERRAZZO SHALL BE FINISHED AND TREATED WITH TWO COATS OF SEALER IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
15. THE DECKS OF ALL COMPARTMENTS AND SPACES NOT LISTED IN THE SCHEDULE SHALL BE BARE AND PAINTED IN ACCORDANCE WITH THE PAINTING SCHEDULE, REF #2.
16. ALL RUBBER MATS AND CARPET WILL BE FURNISHED AND INSTALLED BY OTHERS.
17. THICKNESSES GIVEN FOR UNDERLAYMENTS ARE GENERAL AND MAY BE VARIED AS NECESSARY TO PROVIDE A FAIR SURFACE.
18. WELDS HIGHER THAN 1/16" SHALL BE GROUND DOWN TO A MAXIMUM OF 1/16" TO PREVENT EXCESSIVE FAIRING.

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 5 OF 16

GENERAL NOTES (CONT'D)

19. PAINTING OVER DECK COVERING TO HIDE STAINS OR DISCOLORATIONS SHALL NOT BE PERMITTED.
20. STAINLESS STEEL COVE, ITEM 15 IN BILL OF MAT'L, TO BE FABRICATED BY SHIPYARD AND INSTALLED BY DECK COVERING CONTRACTOR.
21. FOR SAFETY TREADS SEE REF # 3.
22. △1 BEFORE INSTALLING DECK COVERING ALL INTERIOR AND EXTERIOR DECKS SCHEDULED FOR COVERING SHALL BE DRY, FREE OF GREASE, RUST, DIRT AND OTHER FOREIGN MATTER.

UNIT Nº 895

UAO-50554
REQN. 21-500127

REFERENCES

NO	DWG Nº.	TITLE
1	H4650-234-00-02	DECK COVERING DETAILS
2	H4650-161-00-01	PAINTING SCHEDULE
3	H4650-234-00-03	SAFETY TREADS

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 6 OF 16

COLOR SCHEMES △2

DESIGNATION	DESCRIPTION
MC-2	FLEX CO. Nº MC-2 BEIGE W/WHITE, BROWN (WITH FLEX CO. VC-200 BROWN COVE BASE)
MC-3	Nº MC-3 CREAM W/BROWN, GOLD
MC-4	Nº MC-4 AVOCADO W/WHITE, OLIVE
MC-5	Nº MC-5 GREY W/WHITE, OLIVE
MC-8	Nº MC-8 BROWN W/WHITE, BEIGE
COLONIAL BRONZE	AM. ABRASIVE METALS CO. STAIRNOSING, TYPE AM3L, COLONIAL BRONZE
QUARRY TILE	AM. OLEAN MURRY "GOLDEN GLOW" WITH ABRASIVE SURFACE, 6"x6"x 1/2"
	WITH "GOLDEN GLOW" ROUND TOP COVE BASE
1103-NS	DEX-O-TEX "SPECTRUM TERRAZZO" Nº 1103-NS
243	DEX-O-TEX NEOTEX Nº 243 "SEA GREEN"
WHITE / GREEN	SUMMITVILLE MOD. MEDLEY 1"x1", 66% WHITE GRANITE, 16% MOT. LT. GREEN, 9% LT. GREEN,
	9% DK. GREEN; WITH BRIGHT GLAZE NO. 186 "BAYBERRY" BASE

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 7-A OF 16

BILL OF MATERIAL - PER ONE (1) SHIP

ITEM	QUAN	MATERIAL	DESCRIPTION	REMARKS
29	162 SQ. FT.	MAGNESITE	HARDCOAT FINISH, RED, 1/4" THICK	SPEC 59-MC-2 TYPE III
30	40 LIN. FT.	MAGNESITE	HARDCOAT, RED, COVE BASE 1/2" HIGH	
31	15 LIN. FT.	STEEL	2" × 3/8" FLAT BAR ABS GRADE A, PG 895-A	BEVEL TO SUIT. DET. "9-B" REF. 1.

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 9 OF 16

COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
SUN DECK (CONT'D)						
MASTERS DAY ROOM	158-164	S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
PASSAGEWAY	163-170	P/S	VINYL TILE	MC-2		6-B
WEATHER DECK	158-180	P/S	LATEX MASTIC	243		4-B
SHUFFLE BOARD	168-180	S	LATEX MASTIC	243	PAINTED MARKINGS BY SHIPYARD	6-A
VENT PLENUMS	176-177	P/S	LATEX MASTIC	243		4-B
VENT PLENUM	168-170	S	LATEX MASTIC	243	2" HIGH COVE BASE	SIM 4-B
CABIN DECK						
LIBRARY	167-174	P	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
STATEROOM C-2	158-167	P	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
TOILET & SHOWER C-2	164-167	P	CERAMIC TILE	WHITE/GREEN		4-A
STATEROOM C-4	158-164	P	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
TOILET & SHOWER C-4	164-167	P	CERAMIC TILE	WHITE/GREEN		4-A
STATEROOM C-6	158-164	P	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
TOILET & SHOWER C-6	162-165	P	CERAMIC TILE	WHITE/GREEN		4-A
STATEROOM C-8	158-164	P	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
TOILET & SHOWER C-8	162-165	P	CERAMIC TILE	WHITE/GREEN		4-A
STATEROOM C-7	158-167	S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 7 OF 16

BILL OF MATERIAL - PER ONE (1) SHIP

ITEM	QUAN	MATERIAL	DESCRIPTION	REMARKS
1	225 SQ FT	LATEX MASTIC	UNDERLAYMENT 3/8" THK MAXIMUM	FOR CERAMIC TILE SPEC 59-MA-6 (SUBKOTE #2 OR EQ)
2	596 SQ FT	LATEX MASTIC	UNDERLAYMENT 3/4" THK MAXIMUM	FOR QUARRY TILE ↓ ↓
3	9408 SQ FT	LATEX MASTIC	UNDERLAYMENT 1/8" THK MAXIMUM	FOR VINYL TILE
4	2680 SQ FT	LATEX MASTIC	UNDERLAYMENT MINIMUM TO FAIR THICKNESS	FOR CARPET
5	225 SQ FT	CERAMIC	TILE 1/4" THK - CONVENTIONAL SIZE	SPEC 59-MA-4
6	214 LIN FT	CERAMIC	COVE 4" HIGH	SPEC 59-MA-4 TYPE II & IV
7	596 SQ FT	QUARRY	TILE 1/2" THK - 6" SQUARE - NON-SKID	SPEC 59-MA-4 TYPE III STYLE 1
8	222 LIN.FT	QUARRY	COVE - 5" HIGH	↓ ↓ ↓ ↓
9	8841 SQ FT	VINYL	TILE	FED SPEC SS-T-312 TYPE III
10	3969 LIN FT	VINYL	COVE 4" HIGH TOP SET	KENCOVE C-1 OR EQUAL
11	1000 LIN FT	VINYL	COVE 4" HIGH STRAIGHT BASE	IN WAY OF CARPET
12	1080 SQ FT	TERRAZZO	3/8" THK MINIMUM	MIL SPEC MIL-D-3134 TYPE I
13	9544 SQ FT	LATEX MASTIC	1/4" THK MINIMUM - FOR WEATHER DECK AREAS	SPEC 59-MA-7 (NEOTEX OR EQUAL)
14	2014 LIN FT	LATEX MASTIC	COVE 4" HIGH FOR ITEM 13	↓ ↓ ↓ ↓ ↓
15	932 LIN FT	STAINLESS STL	3" HIGH SANITARY COVE BASE	IN WAY OF TERRAZZO - SEE GEN NOTE #20
16	1132 SQ FT	LATEX MASTIC	UNDERLAYMENT 1/4" THK, MAXIMUM	IN WAY OF TERRAZZO SPEC 59-MA-6 (SUBKOTE #2 OR EQ)
17	~~270 SQ FT~~	~~TERRAZZO~~	~~FOR ONE (1) SHUFFLEBOARD~~	~~W/ GAME LINES & NUMBERS~~
18	820 LIN FT	STEEL	2 1/2" × 1/4" FLAT BAR ABS GRADE A	(PG. 895-A) ×
19	280 LIN FT	STEEL	3 1/2" × 1/4" FLAT BAR ABS GRADE A	(PG. 895-A) ×
20	CUTTINGS	STEEL	6 1/2" × 1/4" FLAT BAR ABS GRADE A	
21	65		SAFETY STAIR TREADS	AM. ABRASIVE STYLE AM-3L
22	9	STAINLESS STL.	48" × 120" × #18 GA. (TYPE 302 #4 FINISH)	TO CUT ITEM Nº 15
23	105 SQ.FT.	VINYL	TILE W/ 1/4" UNDERLAYMENT	FOR (56) STAIR TREADS
24	110 SQ.FT.	VINYL	TILE	FOR (65) STAIR RISERS
25	120 SQ.FT.	VINYL	SHEET MAT'L.	FOR STAIR STRINGERS
26	40 LIN.FT.	STEEL	4" × 3" × 1/4" L (ABS GRADE A)	FOR LAV. FDNS. IN T/S SPACES (PG. 895-B)
27	162 SQ.FT.	DEX-O-TEX	MAGNABOND 1/8" THICK	FOR INSULITE I
28	147 SQ.FT.	INSULITE I	UNDERLAYMENT, 1" THICK	APPROVED BY U.S.C.G. NO. 164.006/50/0 FOR MAGNESITE HARDCOAT

H4650-234-00-01 DECK COVERING SCHEDULE SHEET 8 OF 16

COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
BRIDGE DECK						
WHEEL HOUSE	153-173	P/S	VINYL TILE	MC-4		6-B
DECK W.C.	170-172	℄	TERRAZZO	1103-NS		3-A
WEATHER DECK	158-180	P/S	LATEX MASTIC	243		4-B
SUN DECK						
CLEANING GEAR LKR	164-166	P	TERRAZZO	1103-NS		3-A
RADAR ROOM	164-168	P	VINYL TILE	MC-2		6-B
RADIO ROOM	158-164	P	VINYL TYLE	MC-2		6-B
RADIO OFFICERS SR	158-164	P	VINYL TILE	MC-2		6-B
RADIO OFFICERS T/S	161-164	P	TERRAZZO	1103-NS		3-A
REPATRIATED OFFICER SR	158-164	P	VINYL TILE	MC-2		6-B
REPATRIATED OFFICER T/S	161-164	P	TERRAZZO	1103-NS		3-A
MASTERS SR	158-164	S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
MASTERS T/S	161-164	S	CERAMIC TILE	WHITE/GREEN		4-A
MASTERS OFFICE	158-164	S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C

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FRAME 3 OF 5

H4650-234-00-01	DECK COVERING SCHEDULE					SHEET 11 OF 16
COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
BOAT DECK						
OFFICERS LOUNGE	175-182	P	VINYL TILE	MC-4		6-B
3RD ASST ENGR SR	171-175	P	VINYL TILE	MC-2		6-B
3RD ASST ENGR SR	167-171	P	VINYL TILE	MC-2		6-B
3RD ASS'T ENGR SR	164-168	P	VINYL TILE	MC-2		6-B
CHIEF ENGR'S SR	157-164	P	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
△3 CHIEF ENGR'S OFFICE	157-164	P	VINYL TILE	MC-3		6-B
ENGINE DEPT OFFICE	157-164	P	VINYL TILE	MC-2		6-B
1ST ASS'T ENGR'S SR	157-164	P	VINYL TILE	MC-2		6-B
2ND ASS'T ENGR'S SR	157-164	S	VINYL TILE	MC-2		6-B
2ND MATE SR	157-164	S	VINYL TILE	MC-2		6-B
CHIEF MATE SR	158-164	S	VINYL TILE	MC-2		6-B
SHIPS OFFICE	158-164	S	VINYL TILE	MC-2		6-B
MEDICAL TREATMENT RM	164-168	S	VINYL TILE	MC-2		6-B
3RD MATE SR	168-172	S	VINYL TILE	MC-2		6-B
3RD MATE SR	171-173	S	VINYL TILE	MC-2		6-B
CADETS SR	175-179	S	VINYL TILE	MC-2		6-B
CHIEF STEWARD SR	178-172	S	VINYL TILE	MC-2		6-B
3RD ASS'T ENGR'S T/S	171-173	P	TERRAZZO	1103-NS		3-A

H4650-234-00-01	DECK COVERING SCHEDULE					SHEET 13 OF 16
COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
UPPER DECK						
ELECTRICIAN SR	179-182	P	VINYL TILE	MC-3		6-B
DECK ENGINE MECH (DAY) SR	177-180	P	↓	↓		↓
DECK ENGINE MECH SR	174-177	P	↓	↓		↓
DECK ENGINE MECH SR	172-175	P	↓	↓		↓
DECK ENGINE MECH SR	170-173	P	↓	↓		↓
WIPER SR	166-169	P	↓	↓		↓
WIPER SR	164-167	P	↓	↓		↓
CHIEF COOK SR	159-165	P	↓	↓		↓
2ND COOK & BAKER SR	158-164	P	↓	↓		↓
MESSMAN U-8 SR	158-164	P	↓	↓		↓
MESSMAN U-6 SR	158-164	P	↓	↓		↓
MESSMAN U-4 SR	158-164	P	↓	↓		↓
UTILITY U-2 SR	158-164	P	↓	↓		↓
UTILITY U-1 SR	158-164	S	↓	↓		↓
UTILITY U-3 SR	158-164	S	↓	↓		↓
ABS U-5 SR	158-164	S	↓	↓		↓
ABS U-7 SR	158-164	S	↓	↓		↓
ABS U-9 SR	159-164	S	↓	↓		↓

H4650-234-00-01	DECK COVERING SCHEDULE					SHEET 10 OF 16
COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
CABIN DECK (CONT'D)						
TOILET & SHOWER C-7	164-167	S	CERAMIC TILE	WHITE/GREEN		4-A
STATEROOM C-5	158-167	S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
TOILET & SHOWER C-5	164-167	S	CERAMIC TILE	WHITE/GREEN		4-A
STATEROOM C-3	158-165	S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
TOILET & SHOWER C-3	164-167	S	CERAMIC TILE	WHITE/GREEN		4-A
STATEROOM C-1	158-167	S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
TOILET & SHOWER C-1	164-167	S	CERAMIC TILE	WHITE/GREEN		4-A
△2 CARD ROOM	168-174	S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
PANTRY & BAR	167-174	S	QUARRY TILE	GOLDEN GLOW		3-B
LOUNGE	170-178	P/S	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
PASSENGERS BATH	164-167	P	CERAMIC TILE	WHITE/GREEN		4-A
PASSENGERS LAUNDRY	168-170	P	TERRAZZO	1103-NS		3-A
CLEANING GEAR LKR	167-169	S	TERRAZZO	1103-NS		3-A
PASSAGEWAY	164-170	P/S	VINYL TILE	MC-3		6-B
WEATHER DECK	168-182	P/S	LATEX MASTIC	243		4-B

H4650-234-00-01	DECK COVERING SCHEDULE					SHEET 12 OF 16
COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
BOAT DECK (CONT'D)						
3RD ASS'T ENGR'S T/S	167-169	P	TERRAZZO	1103-NS		3-A
3RD ASS'T ENGR'S T/S	166-168	P	TERRAZZO	1103-NS		3-A
CHIEF ENGR'S T/S	162-165	P	CERAMIC TILE	WHITE/GREEN		4-A
1ST ASS'T ENGR'S T/S	160-164	P	TERRAZZO	1103-NS		3-A
2ND ASS'T ENGR'S T/S	160-164	S	↓	↓		3-A
2ND MATE T/S	160-164	S	↓	↓		3-A
CHIEF MATE T/S	160-164	S	↓	↓		3-A
MEDICAL TREATMENT RM T/S	166-168	S	↓	↓		3-A
3RD MATE T/S	168-170	S	↓	↓		3-A
3RD MATE T/S	171-173	S	↓	↓		3-A
CADET T/S	177-179	S	↓	↓		3-A
CHIEF STEWARD T/S	180-182	S	↓	↓		3-A
PASSAGEWAY	163-179	P/S	VINYL TILE	MC-2		6-B
PUBLIC TOILET	164-167	P	TERRAZZO	1103-NS		3-A
CLEANING GEAR LKR	165-167	℄	↓	1103-NS		3-A
OFFICERS LAUNDRY	164-168	S	↓	1103-NS		3-A
WEATHER DECK	164-182	P/S	LATEX MASTIC	243		4-B
△5 STRUCT. VENT PLENUM	180-184	P/S	LATEX MASTIC	243	WITH 2" HIGH COVE BASE	SIM. 4-B

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. H-4650-234-00-01

FRAME 4 OF 5

H4650-234-00-01			DECK COVERING SCHEDULE			SHEET 15 OF 16
COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
UPPER DECK (CONT'D)						
ABS T/S	166-168	S	TERRAZZO	1103-NS		3-A
ABS & OS T/S	172-174	S	↓	↓		↓
OS T/S	176-178	S	↓	↓		↓
BOSN T/S	180-182	S	↓	↓		↓
PASSAGEWAY	163-180	P/S	VINYL TILE	MC-5		6-B
CLEANING GEAR LKR	165-167	℄	TERRAZZO	1103-NS		3-A
CREW LAUNDRY	164-168	S	TERRAZZO	1103-NS		3-A
WEATHER DECK	165-183	P/S	LATEX MASTIC	243		4-B
MAIN DECK						
CREW RECREATION RM	177-182	P	VINYL	MC-8		6-B
CREW MESS	170-177	P	VINYL	MC-8		6-B
CLEANING GEAR LKR	169-170	P	TERRAZZO	1103-NS		3-A
PASSENGERS DINING RM	158-168	P	UNDERLAYMENT		CARPET OVER BY JOINERS	4-C
DUTY OFFICERS MESS	158-162	P	VINYL TILE	MC-2	REMOVABLE CARPET OVER BY JOINERS	6-B
PICK UP AREA	162-167	P	VINYL TILE	MC-5		6-B

H4650-234-00-01			DECK COVERING SCHEDULE			SHEET 14 OF 16
COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
UPPER DECK (CONT'D)						
DECK MAINTENANCE SR	159-165	S	VINYL TILE	MC-3		6-B
ABS SR	164-167	S	↓	↓		↓
ABS SR	166-169	S	↓	↓		↓
ABS SR	170-173	S	↓	↓		↓
O.S. SR	172-175	S	↓	↓		↓
O.S. SR	175-177	S	↓	↓		↓
O.S. SR	177-180	S	↓	↓		↓
BOSN SR	179-182	S	↓	↓		↓
ELECTRICIAN T/S	180-182	P	TERRAZZO	1103-NS		3-A
DECK ENGINE MECH (DAY) T/S	176-178	P	↓	↓		↓
DECK ENGINE MECH T/S	172-174	P	↓	↓		↓
WIPERS T/S	166-168	P	↓	↓		↓
CHIEF COOK & 2ND COOK T/S	159-162	P	↓	↓		↓
MESSMAN T/S	161-164	P	↓	↓		↓
MESSMAN-UTILITY U-2 T/S	161-164	P	↓	↓		↓
UTILITY U-1 & UTILITY U-3 T/S	161-164	S	↓	↓		↓
ABS U-5 & ABS U-7 T/S	161-164	S	↓	↓		↓
ABS U-9 & DECK MAINT. T/S	159-162	S	↓	↓		↓

H4650-234-00-01			DECK COVERING SCHEDULE			SHEET 16 OF 16
COMPARTMENT	FRAME	SIDE	TYPE	COLOR	REMARKS	DETAIL
MAIN DECK (CONT'D)						
GALLEY & SCULLERY	157-168	P/S	QUARRY TILE	GOLDEN GLOW		3-B
GARBAGE ROOM	170-173	S	QUARRY TILE	GOLDEN GLOW		3-B
STEWARDS DEPT OFFICE	172-175	S	VINYL TILE	MC-5		6-B
TALLY CLERKS OFFICE	179-182	S	TERRAZZO	1103-NS		3-A
DECK TOILET	180-182	S	TERRAZZO	1103-NS		3-A
PASSAGEWAY & HATCH	168-183	P/S	VINYL TILE	MC-5		6-B
STAIR TOWER-DECKS & LANDINGS	167-170	P/S	VINYL TILE	MC-2	MAIN DECK TO BRIDGE DECK	6-B
STAIR TOWER-TREADS & RISERS	167-170	P/S	VINYL TILE	MC-2	" " " " "	7-A
△2 3 STAIR TOWER-STRINGERS (INSIDE)	167-170	P/S	VINYL	MATCH VC-200 BROWN	" " " " "	7-A
△7 2 MACH'Y SPACE - AIR INLET PLENUM	179-182	℄	LATEX MASTIC	243	WITH 2" HIGH COVE BASE	SIM 4-B
26'-0" FLAT						
TOILET	166-168	P	TERRAZZO	1103-NS		3-A
MISC.						
△2 6 ELEVATOR CAB	165-167	P	VINYL TILE	MC-2	REMOVABLE CARPET OVER BY JOINER	6-B
36'-0" FLAT						
△8 3 ENGINEER'S WORKSHOP	173-181	P	MAGNESITE	RED	WITH 1/2" HIGH COVE BASE	9-B

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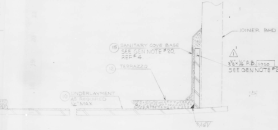
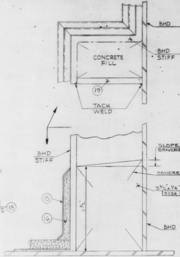
FRAME 5 OF 5

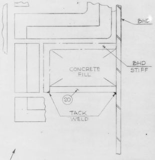

JOINER BHD
15 SANITARY COVE BASE SEE GEN NOTE #20. REF #4
12 TERRAZZO
1
2½"x¼" F.B. 8950 SEE GEN NOTE #2 18
16 UNDERLAYMENT AS REQUIRED ¼" MAX
3/16"

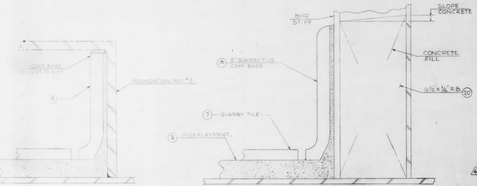
DETAIL "3-A" 1 2
TERRAZZO

NOTE: IN LAUNDRIES, CLEANING GEAR LKRS. & TALLY CLERKS OFFICE THE TERRAZZO SHALL BE 3/8" MAXIMUM THICKNESS APPLIED TO STEEL DECK WITHOUT UNDERLAYMENT.

4 FOR TERRAZZO IN WAY OF JOINER SHOWER STALLS SEE DETAIL "8-A"







3 DETAIL "3-B"
QUARRY TILE

NOTE: FOR QUARRY TILE IN WAY OF JOINER BHDS. & LININGS SEE DETAIL "7-B"

GENERAL NOTES:

1. FOR APPLICATION OF DETAILS AND BILL OF MATERIAL SEE REF #4
2. COAMINGS IN WAY OF JOINER WORK SHALL BE LOCATED TO SUIT JOINER CONTRACTOR.

UNIT No. 8950

	NO.	PLAN NO.	TITLE
4	5	H.B. DWG. #120	SHOWER STALLS
	4	H4650-234-00-01	DECK COVERING SCHEDULE.
	3	H4650-176-00-02	INSULATION & SHT MET SHTG IN ACCOM. SPACES
	2	H4650-236-00-03	FDNS & COAMINGS, COMMISSARY EQUIP
	1	H4650-236-00-01	COMMISSARY SPACES ARRGT MN DK

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	3/29/78	3,4 5	1) IN DETAILS "3-A" & "4-A" REVISED SIZE OF FLAT BAR COAMINGS TO AGREE WITH REF. #4 ALT. 1	RLW	JLM
		5&6	2) REVISED DETAILS "4-C" & "6-B" TO AGREE WITH LATEST JOINER DWG.		
		3,4	3) IN DETAILS "3-A" & "4-C" ADDED NOTES FOR MAXIMUM THICKNESS OF DECK COVERING TO SUIT U.S.C.G. REQ'MTS.		3/31/9
2	4/17/78	2	1) IN DET. "3-A" DECREASED SIZE OF FLAT BAR IN WAY OF CONCRETE FILL AT BHD. STIFFENER TO AGREE WITH REF. #4 ALT. 1	RLW	JLM
3	7/10/78	5,6	1) SHUFFLEBOARD MATERIAL REVISED FROM "TERRAZZO" TO "LATEX MASTIC" WITH PAINTED MARKINGS. DET. "6-A" & PLAN VIEW ALTERED TO AGREE	RLW	
		7	2) IN DET. "7-A" INDICATED STAIR STRINGER & NOTED "VINYL" ON INSIDE.		
		7	3) DET. "7-B" ADDED SHOWING QUARRY TILE IN WAY OF JOINER BHDS. & LININGS.		
		3	NOTE ADDED TO DET. "3-B" TO SUIT.		7/17/8
4	10/18/78	8	1) ADDED DETAILS "8-A" & "8-B" SHOWING TERRAZZO & CERAMIC TILE IN WAY OF JOINER SHOWER STALLS.	RLW	JLM
		1,2, 3,4	ADDED NOTES TO DET'S. "3-A" & "4-A" & ADDED REF. #5 TO SUIT ABV.		
5	4/24/79	4&8	1) IN DETAILS "4-A" & "8-B" INDICATED CERAMIC COVE BASE AS BEING INSTALLED IN TWO (2) PIECES. ABV. TO SUIT AVAILABLE MAT'L.	RLW	JLM 4/25/9
6	8/22/79	4,9	1) ADDED DET. "9-A" SHOWING CERAMIC TILE IN WAY OF FDN. FOR JOINER LAV. UNITS IN PASSENGERS, MASTERS & CHIEF ENGR'S. T/S SPACES. ABV. IN ACCORDANCE WITH Y.I.S. No H-4650-21-976	RLW	JLM 8/23/9
7	11/1/79	9	1) ADDED INSULATING DECK COVERING IN THE ENGINEERS WORKSHOP ON THE 36'-0" FLAT TO PROTECT THE DIESEL OIL TANK BELOW.	AHK	
		9	2) ADDED PLAN VIEW AT 36'-0" FLAT AND SECT "9-B" ADDED TO SUIT.		JLM
			ABOVE ADDED IN ACCORDANCE WITH Y.I.S. H-4650-21-1060 & DEPARTURE 049.		11/5/9
8	12/12/79	5,6	1) IN PLAN "6-A" ADDED HEIGHT OF NUMERALS & LETTERS FOR SHUFFLEB'D. & REVISED DIM. OF DEAD AREA @ ℄ OF COURT FROM 8'-9" TO 8'-0" ABV. TO SUIT CONDITIONS ON SHIP.	RLW	JLM 12/12/9

UAO- 50554
REQN. 21-500127

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 234

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE F.S. & AS NOTED
DATE 10/6/77
DRAWN JTB
IN CHARGE RJK
CHECKED NHT
EXAMINED F. L. Mullin
REVIEW RJK
APPROVED

PLAN NO. H4650-234-00-02
ALT. NO. 8'

DECK COVERING DETAILS

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-9-77				
A.B.S.					
U.S.C.G.	10-26-77				
LLOYD'S R.S.					
U.S.P.H.S.	10-17-77				

H-530

SQUAD SUBMIT & PREL ISSUE

	DATE OF ISSUE													
ALTERATION	-	-	1^3	1^3	2^1	3^3	3^3	3	4^1	4^1	5^1	6^1	7^1	8^1
ENGINEERING DISTRIBUTION	10/9/77	10/6/77	3/21/78	3/29/78	4/27/78	7/17/78	7/21/78	11/6/78	11/9/78	11/30/78	5/7/79	8/31/79	12/3/79	1/2/80
MAIL OWNERS,	4		2		2	4		2			2	2	2	2
AMERICAN BUREAU														
LLOYD'S R.S.														
U.S.M.A.														
U.S. NAVY														
U.S.C.G.	3		3		3	3		3			3	3	3	3
JOINER CONT'R.			1		1	1		1			1	1	1	1
USPH	3		3		3	3		3			3	3	3	3
INSPECTION OWNER'S INSP.	1		1			1		1		1				
AM. BU. INSP.														
LLOYD'S INSP.														
U.S.M.A. INSP.			1			1		1		1				
U.S. NAVY INSP.														
U.S.C.G. INSP.				1	1		1		1		1	1	1	1
COSCHAUG				1	1		1		1		1	1	1	1
OFFICE HULL DRAFT.-21		1P		1	1		1		1	1	1	1	1	1
MACH. DRAFT.-22		2P		2	2		2		2		2	2	2	2
ELEC. DRAFT.-23		1P		1	1		1				1	1	1	1
OUTFIT. DRAFT.-25														
STEIGERWALD								1	1		1	1	1	1
PURCHASING	4P													
MISC. PRODUCTION (BCO)														
ORDER DEPT.														
JOINER CONT. YARD								1						
21-10 W.G. WOOD		1P		1	1		1		1		1	1	1	1
TOTAL ENG'R. DIST.	15	5	11	7	16	13	7	13	7	3	16	17	17	17
YARD DISTRIBUTION	10/6/77	10/6/77	3/29/78	5/1/78	?/5/78	11/17/78	12/1/78	5/7/79	9/5/79	12/7/79	1/3/80			
YARD YARD OFFICE			1	1	1	1	1	1	1	1	1			
SHIP SUPT	2P		1	1	1	1	1	1	1	1	1			
PIECE RATE-11		1P	1	1	1	1	1	1	1	1	1			
TEST DEPARTMENT														
QUALITY ASSURANCE			1	1	1	1	1	–		1				
PLANNING		1P	1	1	1	1	1	1	1	1	1			
STRUCTURAL GROUND ASSEMBLY			2	2	4	4	4	4	4	4	4			
35 DEPT			2	2	2	2	2	2	2	2	2			
BROKUS			1	1	1	1	1	1	✓					
R MILLER			1	1	1	1	1	1	1	1	1			
NO. WAY														
NO. WAY														
NO. WAY														
NO. WAY														
STRUCT. SUPER.			2	2	2	2	2	2	2	2	2			
OPTICAL DETAIL-45		2P	2	2	2	2	2	2	2	2	2			
WET DOCK														
MACH'Y & OUTFIT. PIPE SHOP-52														
OUTFIT. #1 PIER			1	1	1	1	1	1	1	1	1			
PIPE DRAFT.-52			2	2	2	2	2	2	2	2	2			
BOILER SHOP-58			1	1	1	1	1	1	1	1	1			
OUTSIDE MACH.-60			1	1	2	2	2	2	2	2	2			
Q-MAT'L			1	1	1	1	1	1	1	1	1			
ELECTRIC SHOP-70														
SHEET MET. SHOP-74														
COPPER SHOP-51														
PAINT SHOP-75			1	1	1	1	1	1	1	1	1			
OTHER WELDING														
VENDORS			4	–	–	–	–							
MOLD LOFT-41			1	1	1	1	1	1	1	1	1			
BRACKET SHOP														
TOTAL YARD DIST.	28	4	29	23	26	26	26	25	24	24	24			

4650-51-ALT. 1
4650-51-ALT. 2
4650-51-ALT. 3
4650-51-ALT. 4
4650-51-ALT. 4
ALT 5
ALT 6
ALT 7
ALT 8

SQ.FT.

AUTOMATION INDUSTRIES, INC.
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BUILDERS PLAN NO. H-4650-234-00-02

FRAME 1 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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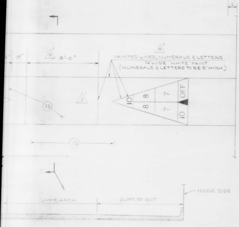
BUILDERS PLAN NO. H-4650-234-00-02

FRAME 2 OF 5

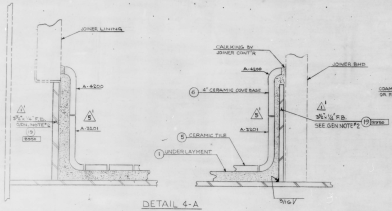


FR. 168
14"
18"
8'-0"
PAINTED LINES, NUMERALS & LETTERS
3/4" WIDE WHITE PAINT
(NUMERALS & LETTERS TO BE 5" HIGH)
10
8
8
7
7
10
OFF
13
15
GAME AREA
SLOPE TO SUIT
HOUSE SIDE

DETAIL 6-A 3

LATEX MASTIC

NO SCALE



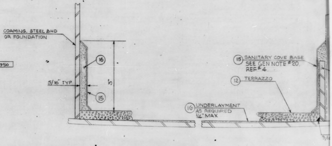
JOINER LINING
A-4200
1
3 1/2" x 1/4" F.B.
GEN. NOTE #2
19
8950
5
A-3201
CAULKING BY
JOINER CONT'R
A-4200
6 4" CERAMIC COVE BASE
5 CERAMIC TILE
1 UNDERLAYMENT
A-3201
JOINER BHD
1
3 1/2" x 1/4" F.B.
SEE GEN NOTE #2
19 8950
3/16

DETAIL 4-A

CERAMIC TILE

4 NOTE: FOR CERAMIC TILE IN WAY OF JOINER SHOWER STALLS SEE DETAIL "8-B"

6 FOR CERAMIC TILE IN WAY OF FDN. FOR LAVATORY UNITS IN PASSENGERS, MASTERS & CHIEF ENGR'S. T/S SPACES SEE DET. "3-A"



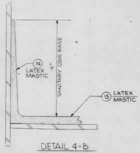
COAMING, STEEL BHD
OR FOUNDATION
16
5/16" TYP
15
15 SANITARY COVE BASE
SEE GEN NOTE #20,
REF #4
12 TERRAZZO
16 UNDERLAYMENT
AS REQUIRED
1/4" MAX

DETAIL "3-A" 1 2

TERRAZZO

NOTE: IN LAUNDRIES, CLEANING GEAR LKRS. & TALLY CLERKS OFFICE THE TERRAZZO SHALL BE 3/8" MAXIMUM THICKNESS APPLIED TO STEEL DECK WITHOUT UNDERLAYMENT.

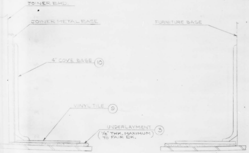
4 FOR TERRAZZO IN WAY OF JOINER SHOWER STALLS SEE DETAIL "8-A"



14
LATEX
MASTIC
SANITARY COVE BASE
4"
13 LATEX
MASTIC

DETAIL 4-B

LATEX MASTIC - WEATHER DECKS ABOVE MAIN DECK IN MIDSHIP DECKHOUSE AREA

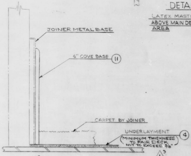


JOINER BHD.
JOINER METAL BASE
FURNITURE BASE
4" COVE BASE 10
VINYL TILE 9
UNDERLAYMENT 3
(1/8" THK. MAXIMUM)
TO FAIR DK.

1

DETAIL 6-B

VINYL TILE

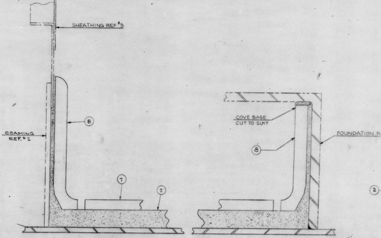


JOINER METAL BASE
4" COVE BASE 11
CARPET BY JOINER
UNDERLAYMENT 4
(MINIMUM THICKNESS TO FAIR DECK NOT TO EXCEED 3/8")

1 1

DETAIL 4-C

UNDERLAYMENT IN WAY OF CARPET



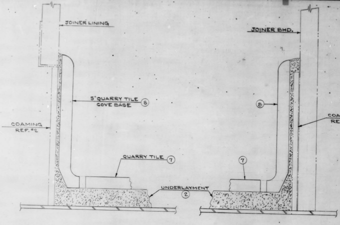
SHEATHING REF #3
COAMING
REF #2
8
7
2
COVE BASE
CUT TO SUIT
FOUNDATION REF #2
8
2 UNDER

1 DETAIL "3-B"

QUARRY TILE

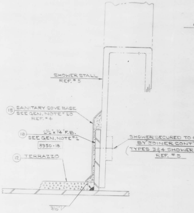
NOTE: FOR QUARRY TILE IN WAY OF SEE DETAIL "7-

FDN. TO BE LOCATED BY
THE JOINER CONT'R.
9'-0" FLAT
INSULATING
MAGNESITE
EXP METAL
BHD
27'-0" OFF ℄
3/8"
2"×3/8" F.B.
3/16"
31
2"
3/8"
3/16"
2"


JOINER LINING
5" QUARRY TILE
COVE BASE ⑧
COAMING
REF. #2
QUARRY TILE ⑦
UNDERLAYMENT
②
⑦
JOINER BHD.
⑧
COAMING
REF. #2

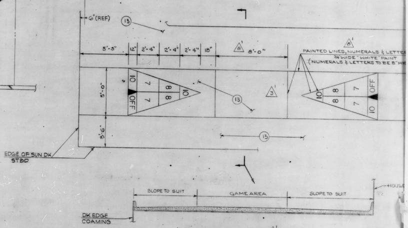
DETAIL "7-B" △3 3

QUARRY TILE IN WAY OF JOINER BHDS. & LININGS


SHOWER STALL
REF. #5
⑮ SANITARY COVE BASE
SEE GEN. NOTE #20
REF. #4
⑱ 2 1/2"×1/4" F.B.
SEE GEN. NOTE #2
8950-18
⑫ TERRAZZO
SHOWER SECURED TO COAMING
BY JOINER CONT'R.
(TYPES 3 & 4 SHOWER STALLS ONLY)
REF. #5
3/16"

DETAIL "8-A" △4 1

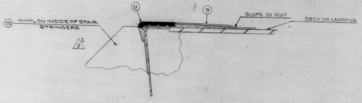
TERRAZZO IN WAY OF JOINER SHOWER STALLS
OFFICERS' & CREW'S T/S SPACES

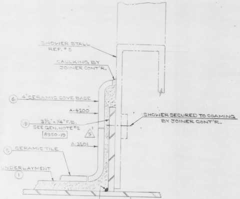

FR 180
6"(REF)
⑬
5'-3"
12"
2'-4"
2'-4"
2'-4"
18"
△8 1
8'-0"
△8 1
PAINTED LINES, NUMERALS & LETTER
3/4" WIDE "WHITE" PAINT
(NUMERALS & LETTERS TO BE 8" HI
10
7
8
8
10
OFF
7
8
10
△3 1
⑬
5'-0"
3'-6"
10
8
8
7
7
OFF
10
⑬
EDGE OF SUN DK
STBD
SLOPE TO SUIT
GAME AREA
SLOPE TO SUIT
HOUSE
DK EDGE
COAMING

DETAIL 6-A △3 1

LATEX MASTIC

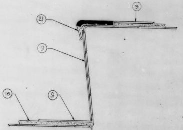
NO SCALE


㉕ VINYL ON INSIDE OF STAIR
STRINGERS
△3 2
㉑
⑨
SLOPE TO SUIT
DECK OR LANDING


SHOWER STALL
REF. #5
CAULKING BY
JOINER CONT'R.
⑥ 4" CERAMIC COVE BASE
A-4200
⑲ 3 1/2"×1/4" F.B.
SEE GEN. NOTE #2
8950-19
△5 1
SHOWER SECURED TO COAMING
BY JOINER CONT'R.
A-3201
⑤ CERAMIC TILE
UNDERLAYMENT
①
3/16"

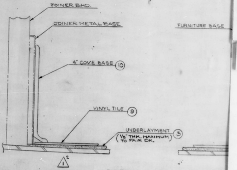
DETAIL "8-B" △4 1

CERAMIC TILE IN WAY OF JOINER SHOWER STALLS
MASTER'S, PASSENGER'S & CHIEF ENG'RS. T/S SPACES



DETAIL 7-A

SCALE: 6" = 1'-0"


JOINER BHD.
JOINER METAL BASE
4" COVE BASE ⑩
VINYL TILE ⑨
UNDERLAYMENT ③
(1/8" THK. MAXIMUM)
TO FAIR DK.
△1 2
FURNITURE BASE

DETAIL 6-B

VINYL TILE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

BUILDERS PLAN NO. H-4650-234-00-02

FRAME 3 OF 5

	WELDING	11/14/78
	Use Filler Metal in Accordance with the Following Table:	

WHEN WELDING

THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC		PROCEDURE NO.
AWS. A 5.1.69	6011	CWE 101 SMAW
AWS. A 5.1.69	7018	CWE 101 SMAW
AWS. A 5.1.69	6027	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
AWS. A 5.1.69	7024	CWE 101 SMAW
		CWE 105 SMAW (Gravity)
AWS. A 5.5.69	8018C3	CWE 101 SMAW
Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C-25)
Unicore V90 or equal		CWE 209 FCAW
AWS. A 5.17.69 EM12K		CWE 301 SAW (Single)
(Lincoln 860-0 Flux)		CWE 302 - CWE 303 SAW (Multiple)
Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
AWS. A 5.1.69	9018M	CWE 108 SMAW (Fillet Welds 9018M)
	11018M	(Butt Welds 11018M)
AWS. A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

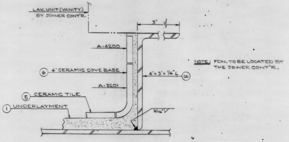
MATERIAL DESIGNATION, MA MB
MATERIAL DESIGNATION, AH DH EH
MATERIAL DESIGNATION, A-514
MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

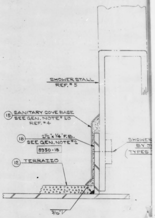
NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3


LAV. UNIT (VANITY)
BY JOINER CONT'R.
3"
A-4200
⑥ 4" CERAMIC COVE BASE
A-3201
⑤ CERAMIC TILE
① UNDERLAYMENT
4"x 3"x 1/4" L ㉖
3/16"
NOTE: FDN. TO BE LOCATED BY THE JOINER CONT'R.

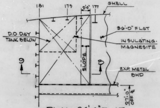
6¹ "9-A"

CERAMIC TILE IN WAY FDN. FOR LAV. UNITS IN PASSENGERS
MASTERS & CHIEF ENGINEERS TOILET & SHOWER SPACES


SHOWER STALL
REF. # 5
⑮ SANITARY COVE BASE
SEE GEN. NOTE # 20
REF. # 4
⑱ 2 1/2" x 1/4" F.B.
SEE GEN. NOTE # 2
8950-18
⑫ TERRAZZO
SHOWER
BY J
(TYPES
3/16"

DETAIL "8-A" 4

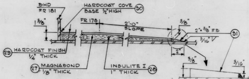
TERRAZZO IN WAY OF JOINER SHOWER
OFFICERS' & CREW'S T/S SPACES


181
179
2'-0"
177
SHELL
36'-0" FLAT
D.O. DAY
TANK BELOW
INSULATING-
MAGNESITE
SLOPE
9
B
EXP. METAL
BHD
27'-0" OFF ℄

7² PLAN-36'-0" FLAT

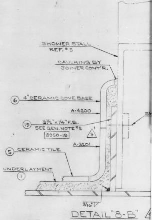
(ENG'RS WORKSHOP)

3/16" = 1'-0"


BHD
FR 181
HARDCOAT COVE
BASE 1/2" HIGH ㉚
1 3/8"
FR 178
2'-0"
SLOPE
3/8"
2" x 3/8" FB
㉛
3/16"
2"
㉙ HARDCOAT FINISH
1/4" THICK
㉗ MAGNABOND
1/8" THICK
INSULITE I
1" THICK ㉘
3/8"
3/16"
2"

7² SECT "9-B"

3" = 1'-0"


SHOWER STALL
REF. # 5
CAULKING BY
JOINER CONT'R.
⑥ 4" CERAMIC COVE BASE
A-4200
⑲ 3 1/2" x 1/4" F.B.
SEE GEN. NOTE # 2
8950-19
5¹
A-3201
⑤ CERAMIC TILE
UNDERLAYMENT
①
3/16"
S

DETAIL "8-B" 4

CERAMIC TILE IN WAY OF JOINER SHO
MASTER'S, PASSENGER'S & CHIEF ENG

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. H-4650-234-00-02

Oct 1980

FRAME 4 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

BUILDERS PLAN NO. H-4650-234-00-02

FRAME 5 OF 5

8X

WELDING 11/14/78

Use Filler Metal in Accordance with the Following Table:

WHEN WELDING

THIS STEEL	TO THIS STEEL	USE FILLER METAL
I	I	1, 2, 3, 4, 6, 8
I	II	2, 4, 6, 8
II	I	2, 4, 6, 8
II	II	*2, 4, 5, 7, 8, 9
III	III	10
III	II	2
IV	II	11

FILLER METAL SPEC		PROCEDURE NO.
1. AWS. A 5.1.69	6011	CWE 101 SMAW
2. AWS. A 5.1.69	7018	CWE 101 SMAW
3. AWS. A 5.1.69	6027	CWE 101 SMAW CWE 105 SMAW (Gravity)
4. AWS. A 5.1.69	7024	CWE 101 SMAW CWE 105 SMAW (Gravity)
5. AWS. A 5.5.69	8018C3	CWE 101 SMAW
6. Chemtron 7000 or equal		CWE 209 FCAW (Fluxcore C-25)
7. Unicore V90 or equal		CWE 209 FCAW
8. AWS. A 5.17.69 EM12K (Lincoln 860-0 Flux)		CWE 301 SAW (Single) CWE 302 – CWE 303 SAW (Multiple)
9. Chemtron 88C3 or equal		CWE 207 FCAW (Fluxcore CO_2)
10. AWS A 5.1.69	9018M 11018M	CWE 108 SMAW (Fillet Welds 9018M) (Butt Welds 11018M)
11. AWS A 5.4.69	E310	CWE 110 SMAW

STEEL CODE

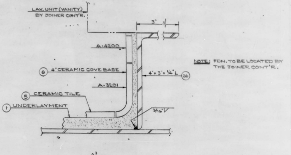
- I MATERIAL DESIGNATION, MA MB
- II MATERIAL DESIGNATION, AH DH EH
- III MATERIAL DESIGNATION, A-514
- IV MATERIAL DESIGNATION, STAINLESS STEEL

STEEL DESIGNATION AND DESCRIPTION

MATERIAL DESIGNATION	DESCRIPTION
MA	Mild Steel Plates and Shapes ABS Grade "A"
MB	Mild Steel Plates and Shapes ABS Grade "B"
AH	High Strength Steel Plates and Shapes ABS Grade "AH"
DH	High Strength Steel Plates and Shapes ABS Grade "DH"
EH	High Strength Steel Plates and Shapes ABS Grade "EH"

NOTE: All steel designated as AH, DH and EH are AH36, DH36 and EH36 Quality Steels.

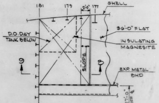
* E7018 for Fillet Welds except EH to EH use 8018C3
All Butt Welds High Strength to High Strength use 8018C3


LAV. UNIT (VANITY)
BY JOINER CONT'R.
3"
A-4200
⑥ 4" CERAMIC COVE BASE
A-3201
⑤ CERAMIC TILE
① UNDERLAYMENT
4"x3"x1/4"L ㉖
3/16"
NOTE: FDN. TO BE LOCATED BY THE JOINER CONT'R.

6 1

"9-A"

CERAMIC TILE IN WAY FDN. FOR LAV. UNITS IN PASSENGERS MASTERS & CHIEF ENGINEERS TOILET & SHOWER SPACES

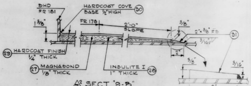

181
179
2'-0"
177
SHELL
36'-0" FLAT
D.O. DAY TANK BELOW
INSULATING MAGNESITE
9
B
SLOPE
EXP. METAL BHD
27'-0" OFF ℄

7 2

PLAN - 36'-0" FLAT

(ENG'RS WORKSHOP)

3/16"=1-0"


BHD FR 181
HARDCOAT COVE BASE 1/2" HIGH ㉚
1 3/8"
FR 178
2'-0" SLOPE
3/8"
2"x3/8" FB
㉛
3/16"
2"
㉙ HARDCOAT FINISH 1/4" THICK
㉗ MAGNABOND 1/8" THICK
INSULITE I 1" THICK ㉘
3/8"
3/16"
2"

7 2

SECT "9-B"

3" = 1'-0"

10

9

LIST OF EQUIPMENT

NO.	NO. SH.	ITEM
1	1	HOT WAT. STOR. TK., & HEAT.
2	5	MACH. SPACE SUPP. FAN
2A	1	MACH. SPACE SUPP. FAN FOR REFRIG. MACH. SPACE
3	2	MACH. SPACE EXH. FAN
4	1	H.P. TURBINE
5	1	L.P. TURBINE
6	2	FIRST REDUCTION GEAR
7	1	SECOND REDUCTION GEAR
8	1	L.O. COOLER
9	1	MAIN L.O. STRAIN. (DUPLEX) DISCHARGE
10	1	L.O. SUMP TANK
11	1	L.O. STORAGE TK.
12	1	L.O. SETTLING TK.
13	1	SLUDGE TANK
14	1	MAIN CONDENSER
15	1	D.O. TRANSFER PUMP
16	1	GLAND LEAK. EXHAUST.
17	1	INLET SCOOP
18	1	OVERBOARD DISCH.
19	1	MAIN CIRC. PUMP
20	1	L.O. COOLER (DIES. GEN.)
21	1	FIRE & TK. WASH. P.
22	2	CONSOLE (CARGO REFRIG.)
23	1	BILGE PUMP
24	2	SALT WATER SERV. P.
25	1	BILGE, BALL. & S.W. SERV. P.
26	1	E.R. BILGE SUMP P.
27	2	PRIMING PUMP
28	2	MAIN CONDENSATE P.
29	1	F.W. HEAT EXCH. (DIES. GEN.)
30	2	MAIN FEED PUMP
31	1	PORT FEED PUMP
32	2	DOMESTIC WATER P.
33	1	H.W. CIRC. PUMP
34	1	I.W. CIRC. PUMP
35	1	S.W. OVB'D P. (BRINE-DIST.)
36	2	ATMOS. DRAIN PUMP
37	2	VACUUM PUMP-MN. CONDENSER
38	1	L.O. FILTER (DIES. GEN.)
39	2	F.O. SERVICE P.
40	1	F.O. TRANSFER P.
41	2	L.O. SERVICE PUMP
42	1	EMER. L.O. PUMP
43	2	MAIN AIR COMP.
44	1	CONTROL AIR COMP.
45	1	D.O. DAY TANK
46	1	S.S. AIR TANK
47	1	CONTROL AIR TANK
48	1	CARGO REFRIG. PUMP OUT RECEIVER
49	2	MAIN BOILER
50	2	AIR HEATER
51	2	FORCED DRAFT FAN
52	1	D.C. HEATER
53	1	1st STAGE FD. HEAT. GLAND EXH. COND. & DR. COOL.
54	1	3rd STAGE FEED HEAT.
55	1	4th STAGE HEAT.
56	1	ATMOS. DR. & INSPECT. TK.
57	1	DISTILLING PLANT
58	2	S.S. REFRIG. PACKAGE UNIT
59	8	CARGO REFRIG. PACKAGE UNIT NOS. 1 THUR 8
60	2	AIR COND. PACKAGE UNIT
61	1	SCUTTLEBUTT
62	1	TURBO-GEN. SET
63	1	MAIN SWITCHBOARD
64	1	ENGINE ROOM CONSOLE
65	2	F.D. FAN CONTROLLER
66	1	REFRIG. COMP. TRANSFER UNIT
67	1	WAT. HEAT. & DRAIN COOL. (TK. CLEAN)
68	6	MAIN STEAM VALVES
69	1	WORKBENCH
70	1	CARGO DEHUMIDIFICATION UNIT
71	1	THRUST BEARING & THRUST SHAFT
72	9	GROUP CONTROL CENTERS (26' LVL.)
73	2	WATER PURIFIER
74	2	CARGO COIL H.W. CIRC. P.
75	1	CARGO COIL H.W. HEAT.
76	1	EVAP. FEED WATER P.
77	1	FRESH WATER COOLER
78	1	DIESEL GENERATOR
79	1	DIESEL GEN. MUFFLER
80	2	BURNER ACCESS PLATFORM
81	1	BURNER WORKBENCH
82	1	FEED TESTING SET
83	1	TELEPHONE HOOD
84	1	LOG DESK
85	1	DRINKING FOUNTAIN
86	1	CO_2 HOSE REEL & BOTTLES
87	2	START. AIR TKS. (DIES. GEN.)
88	1	WORKTABLE
89	1	TANK CLEANING PUMP
90	4	CO_2 GAS BOTTLE
91	2	WASTE LOCKER
92	1	TURNING GEAR
93	1	FEED TEST SINK
94	2	F.D. FAN VANE CONTROLLER
95	1	CONTR. BOARD FOR PNEUM.V.
96	AS REQ'D.	TANK LEVEL IND. BOARDS
97	1	CHEM. MIXING & STOR. TK.
98	1	DIES. GEN. L.O. STORAGE TK.
99	2	FREON ACCUMULATOR
100	1	D.O. COALESCER
101	1	L.O. COALESCER (DIES. GEN.)
102	1	USED L.O. TANK
103	1	D.O. DRAIN PUMP
104	1	SEWAGE EXPELLSOR
105	1	GARBAGE COLL. TK.
106	1	DIES. GEN. F.W. EXPAN. TK.
107	1	MAIN L.O. COALESCER
108	2	BOILER COMP. MIX. TK. & P.
109	2	FEED ANALIZER
110	2	PRIM. & SECOND. SAMPLE WTR. COOL.
111	1	COND. COMP. MIX. TK. & P.
112	1	FIRE PUMP
113	1	CARGO TK. H.W. EXPANS. TANK
114	2	LOWER RETRACTABLE SOOT BLOWER
115	2	UPPER RETRACTABLE SOOT BLOWER
116	1	CONDENSATE ANALIZER
117	4	FREON PUMPS
118	1	EMER. L.O. P. CONTROL SYS.
119	1	TRIMMING PUMP
120	2	REFRIG. AIR COOL. (REFRIG. FILT.) S.S.
121	2	REFRIG. COMP. OIL STILLS
122	1	BURNER TIP CLEAN. TK.
123	1	D.O. DRIP TANK
124	3	TRANSFORMER 25 KVA M.S. LIGHTING
124A	3	TRANS. 15 KVA HOLD HTR PANEL
125	1	ENGINEER'S STOREROOM
126	1	ELECTRICAL WORKSHOP
127	AS REQ'D	SHAFT STEADY BEARING
128	-	MACHY. REMOVAL AREA
129	-	
130	1	CATHODIC PROT. PWR. PNL.
131	1	120 V. PWR. PANEL (SECTION 2)
132	1	FIRE & TANK WASH. P. STRAINER 8" IPS
133	1	CATHODIC PROT. SATURABLE REAC.
134	1	CATHODIC PROT. CONTR.
135	1	450 V. POWER PANEL
136	1	450 V. EVAP. PLANT PWR. PNL.
137	1	REFRIG. FILTER (CONT. AIR)
138	1	CATHODIC PROT. AMMETER
139		
140	1	COMPRESSION TANK
141	1	VACUUM TANK/PUMP PC. 27
142	2	F.O. HEATER
143	2	DISTILLED WATER TKS.
144	2	FRESH WATER (POTABLE) TKS.
145	1	BILGE PUMP SUCT MANIF.
146	1	BILGE PUMP SUCT MANIF.
147	1	BILGE PUMP DISCH. MANIF.
148	1	B.B. & S.W. P. DISCH. MANIF.
149	1	B.B. & S.W. P. SUCT. MANIF.
150	1	S.W. SERV. P. DISCH. MANIF.
151	1	S.W. SERV. P. SUCT. MANIF.
152	1	FIRE & WASH. P. MANIF.-SUCT.
153	1	FIRE & WASH. P. MANIF.-DISCH.
154	1	TK. CLEAN. P. SUCT. MANIF.
155	1	TK. CLEAN. P. DISCH. MANIF.
156	1	F.O. TRANS. PUMP, TRANS. MANIF.
157	1	F.O. TRANS. PUMP, SUCT. MANIF.
158	1	F.O. TRANS. PUMP, DISCH. MANIF.
159	1	ENGINEER'S WORKSHOP
160	1	DUPLEX STRAINER-BILGE
161	1	DUPLEX STRAINER-S.W. SERVICE
162	1	DUPLEX STRAINER-BILGE & BALLAST
163	1	DUPLEX STR. EVAP. FEED P. SUCT.
164	1	DUPLEX STR. DIES. GEN. S.W. SUP.
165	1	DUPLEX STR. F.O. SERV. P. SUCT.
166	1	DUPLEX STR. F.O. TRANS. P. SUCT.
167	1	FIRE PUMP CONTROLLER
168	1	SILENCER, D.G. INTAKE
169	1	LIGHTING PANEL
170	1	LIGHTING PANEL
171	1	LIGHTING PANEL
172	1	120 V. PWR. PNL. (SECTION 1)
173	1	STRAINER, L.O. (DIESEL GEN.)
174	1	L.O. PRIMING PUMP (DIESEL)
175		
176	2	SOOT BLOWER CONTROL PANEL
177	1	JACKET WATER HEATER CONT.
178	1	L.O. HEATER CONTROLLER
179	1	AFTER COOLER HEATER
180	1	DIESEL GEN. CONTROL PANEL
181		
182	1	SEWAGE PLANT AND PUMPS
183	1	LOW SEACHEST
184	1	HIGH SEACHEST
185	-	FREON STOWAGE SPACE
186	1	S.W. CIRC. PUMP DIESEL GEN.
187	1	HIGH SEACHEST DIESEL GEN.
188	1	LOW SEACHEST DIESEL GEN
189	2	FORCED DRAFT BLOWER SOUND ATTENUATION BOX
190		
191	1	DIESEL GEN L.O. PRIM. PUMP
192	1	STAND WITH COFFEEMAKER
193	1	BILGE SUCTION MANIFOLD
194	1	HYDRAULIC POWER UNIT CARGO CONTAINER GUIDES
195	2	BOILER TEMP. PROBE
196	2	AIR COMPR. AFTER COOLER
197	1	MAIN ENGINE EMERGENCY THROTTLE H10 UNIT
198	1	SALINITY INDICATING PANEL
199	1	KERESONE TANK
200	4	CO_2 BOTTLES FOR BOILER WTR TREATMENT SYSTEM
201	1	HEELING TANK CONTROL BOARD
202	1	SMOKE INDICATOR EQUIPMENT AND PANEL
203	1	A/C UNIT FOR MAIN, AUX. AND REFER CONSOLES.
204	1	DIESEL GEN. L.O. HEATER PACKAGE

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	2-25-77	9 9,10 9,11 4,5 2,3 3,9 19,20 14 4 4,5,6&7 9,10,11 12,13,14 6&7	1- REVERSED THE POSITION OF THE CARGO REFRIG. CONSOLES. 2- REVISED THE POSITION OF GROUP CONTROL'S D-1 THRU D-4 TO ALLOW FOR PIPING INSTALLATION 3- REMOVED I.C & EMERG. LTG PNL'S TO STBD SIDE, AND IN IT'S PLACE ADDED MACH SPACE MISC POWER PANEL. 4- REMOVED MANHOLE FROM 8'-4" OFF ℄ SHIP & 1'-7" OFF FR. 157 STBD SIDE. ADDED MANHOLE AT 8'-2" OFF ℄ SHIP & 20" OFF FR. 159 PORT SIDE. 5- IN LIST OF EQUIP. ADDED NO. 2-A - MACH. SPACE SUPPLY FAN FOR THE REFRIG. MACH. SPACE; REVISED THE QTY OF NO. 72 FROM 8 TO 9; DELETED NO. 129; REVISED QTY OF NO. 124 FROM 6 TO 3 & FROM 75 KVA TO 25 KVA; ADDED NO. 124A - 3 (QTY) TRANSFORMERS (15 KVA). 6- IDENTIFIED FEED PUMPS (NO. 30) 7- CLARIFIED THE ARRG'T OF FIRE DAMPERS AT EXHAUST FANS ON BOAT DECK PLAN. 8- DELETED OFFSET IN ITEM NO. 159. 9- REVISED LUBE OIL COOLING UNIT (NO. 8) & INDICATED FINAL LOCATION. THE ABOVE ALTERATIONS WERE MADE TO COMPLY WITH THE OWNER'S LETTER OF APPROVAL TO BSC DATED FEBRUARY 9, 1977. 10- ON THE LOWER LVL. PLAN ADDED ITEMS; 190, 191 & 193; AND FINALIZED THE LOCATION OF THE FOLLOWING ITEMS 15, 16, 24, 27, 53, 69, 101, 106, 119, 141, 146, 147, 148, 150, 153, 156, 165 & 180. 11- ON THE 26'-0" LVL. PLAN ADDED ITEM NO. 192, AND FINALIZED THE LOCATION OF ITEMS; 30, 31, 54, 55 & 64. ADDED A MACH SP. MISC. PUMP PANEL. 12- ON THE 36'-0" LVL ADDED ITEM; 194; DELETED NO. 175; MOVED THE FOLLOWING PN'LS; ACUM, OIL STLL HEATER, & CARGO LIQ REFRIG. FINALIZED THE LOCATION OF THE FOLLOWING ITEMS. 1, 33, 34, 48, 58, 59, 66, 77, 99, 117, & 121. 13- INDICATED A WATERTIGHT DOOR IN BULKHEAD 184 LOWER LEVEL AFT TO COMPLY WITH U.S. COAST GUARD LETTER DATED 15 MARCH 1977.	PCG	GEORGE G. SHARP, INC. LETTER DATED MAY 19, 1977 FILE: 5587/540
2	5/26/77	9 13 10 10	1 ON THE 26'-0" LVL ITM. 59 REEFER PKG UNITS RELOCATED. MACHY OPNGS AT ℄ BET. FRS 164 TO 168 REMOVABLE GRATINGS REDESIGNED CHGD TO FLR PLATES, ITEM NO. 88 RELOCATED. 2 ON THE 36'-0" LVL INDENTIFIED CARGO REEFER UNITS NO. 59 3. ON THE PLAN LOWER LEVEL AFT RELOCATE ITEM 73 ALL TO COMPLY WITH GEORGE G. SHARP LTR DATED MAY 19, 1977 4 IN THE LIST OF EQUIP. ADDED ITM 195 5. ON THE 26'-0" LVL ADDED ITEM 195 BOILER TEMP PROBE BET. FRS. 168-173 P/S 6. MODIFIED PLATF. FOR BURNER ACCESS NO. 80 & RELOCATED LADDER TO SUIT. RELOCATED ITEMS NO. 139, 181, 91 & 76 TO SUIT. (CONTINUED)	AG.	GEO G SHARP, INC. LTR DATED JULY 28, 1977 FILE: 5587/540
2	6/24/77	15 13 10 12, 13	7. ON THE 2ND DK AFT: REVISED GRATINGS, LADDERS & UPTAKE FORCED DRAFT SYSTEM BET. FRS. 170-174 P/S 8. ON THE 36'-0" LVL PLATFORMS & LADDERS RELOCATED & MODIFIED TO SUIT 2ND DK LVL ABOVE BET. FRS 170-173 P/S 9 ON 26'-0" LVL. MODIFIED FLOOR PLATES BET. FR 170 TO FR 174 IN FRONT OF BOILERS 10. IN 36'-0" LVL. RELOCATED ITM 117 BET FRS 161-164 (S) TO SUIT PIPING, ADDED ITEM 196 IN LIST OF EQUIP & LOCATED ITM 196 BET. FRS 165-166 ℄. RELOCATED LTG. PNL. FROM FR 165 TO 170 RELOCATED PWR. PNLS NO. 43 & 44 ON BHD 165 TO SUIT PIPING AREA. ITEMS 4 TO 10 MADE TO SUIT FINAL LOCATION OF EQUIPT AS SHOWN ON WORKING DWGS. 11. ON 26'-0 LVL RESERVED FLOOR PLATING AND OPEN AREA OVER H.P. & L.P. TURBINE PENDING APPROVAL OF BETH LETTER DATED 2 JUNE 1977 FILE. 4650/391/22.3	AG	
3	9-9-77	1 2 3 9 10 11 12&13 15&16 20 21 16&17 17&18 19&20	IN PLAN TITLE DELETED THE WORD "PRELIMINARY", IN ACCORDANCE WITH COMMENT NO. 20 OF B.S.C. LTR. DATED 8 MARCH 1977, FILE: 4650/111-D/2214 AND REVISED DRWG. TO SUIT AS FOLLOWS: LIST OF EQUIPMENT 1. DELETED ITEM NOS. 139 & 181 2. ADDED ITEM NOS 198, 199 & 200. 3 INCR QTY. OF ITEM NO. 91 & 176 FROM 1 TO 2 26'-0" FLAT. 4. ADDED ITEM NOS. 198, 199, 200 & 91 IN PAINT LOCKER. 5. REMOVED RESERVATION FROM OPEN AREA OVER H.P. & L.P. TURBINE AS PER COMMENT NO. 2 OF G.G.S. LTR. NO 5587/540 DATED JULY 28 1977. 6 FINALIZED THE LOCATION OF ITEM NOS. 65, 80, 81, 82, 93, 96, 108, 109, 110, 111, 116 AND 176 36'-0" FLAT 7. FINALIZED GRATING ARRANGEMENT 2ND DK AFT 8 FINALIZED GRATING ARRANGEMENT 2ND DK FWD. 9 FINALIZED LOCATION OF ITEM NOS. 2A & 185 AS PER COMMENT NO. 4 OF G.G.S. LTR. NO. 5587/540 DATED JULY 28 1977. MAIN DECK 10. FINALIZED LOCATION OF STBD AIR HEATER AND GRATING ARRGT. UPPER DECK 11. FINALIZED GRATING ARRANGEMENT BOAT DECK 12. FINALIZED GRATING ARRANGEMENT	G.L.W.	GEORGE G SHARP INC. LTR. DATED OCT. 13, 1977 FILE: 5587/540
4	3-30-78	1 2 2 7 4,5,6,7 9,10 9,10 10,13	1. CLARIFIED ALT 3⁴ ABOVE AS FOLLOWS: a. ADDED ITEM NOS. 198, 199 & 200. b. ADDED ITEM NO 91 IN AFT PAINT LOCKER THE ABOVE ITEM AS PER G.G.S LTR. 5587/540 DATED OCT. 13 1977 REVISED DRWG. TO SUIT FINAL PIPING ARRGTS. AS FOLLOWS: LIST OF EQUIPMENT 2. ADDED ITEM NOS. 201, 202, 203 & 204. 3. REVISED DESCRIPTION OF ITEM NOS. 151, 152 & 153 LOWER LEVEL 4. ADDED ITEM 204 NEAR FR 182 PORT 5. FINALIZED GRATING ARRANGEMENT. 26'-0" FLAT 6. ADDED ITEM NOS. 201, 202 AND 203. 7. REVISED LOCATION OF ITEM NOS. 85, 88, 91, 192 & 68 (H.P. FEED ONLY) TO SUIT ADDED ITEMS. 8. RELOCATED ITEM NO. 169 FROM 26'-0" FLAT TO 36'-0" FLAT 36'-0" FLAT 9. INDICATED ACTURAL SIZE OF MACHY REMOVAL (ITEM 128)	G.L.W.	4/4/78 Aja
5	1-11-79	5 2,8	1. INDICATED ITEM NO. 100 IN PLAN VIEW LOWER LEVEL FWD. 2. DELETED ITEM NO. 190 IN PLAN VIEW LOWER LEVEL AFT AND LIST OF MACHINERY AS THIS IS A DUPLICATE OF ITEM NO. 204 ALREADY SHOWN AND LISTED.	G.L.W.	1/23/79 Aja

HULL	DESIGN	CHARGE
4651	↑	↑
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 20 DEC. 1976
DRAWN F.J. DUERBECK APPROVED
TRACED APPROVED
CHECKED JE 26 APPROVED HBJR

PLAN NO. M-4650-111-2 ALT. NO. 5²

ARRG'T. OF MACHINERY PLAN VIEWS AND LIST OF EQUIPMENT

APPROVED BY	APPROVAL LETTERS				
HULL	4650-51				
	DATE	DATE	DATE	DATE	DATE
OWNERS	2-9-77				
A.B.S.	12-1-77				
U.S.C.G.	10-17-77				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
2	M-4650-111-4	ARRG'T. OF MACHINERY - ELEVATIONS & SECTIONS
1	M-4650-111-3	ARRG'T. OF MACHINERY - SECTIONS

KEY PLAN

M-554

		DATE OF ISSUE						
		4650-51	4650-51 REPL.	4650-81	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
	ALTERATION	0	1	2	2	3	4	5
	ENGINEERING DISTRIBUTION	1-3-77	4-15-77	6-24-77	7-5-77	9-14-77	4-14-78	1-26-79
MAIL	OWNERS	5	5	5		5	3	4
MAIL	AMERICAN BUREAU	3	3			3	3	3
MAIL	LLOYD'S R.S.							
MAIL	U.S.M.A.		3			3	3	3
MAIL	U.S. NAVY							
MAIL	U.S.C.G.	3	3			3	3	3
MAIL	JOINER CONT'R.							
INSPECTION	OWNER'S INSP.	1	1		1	1	1	1
INSPECTION	AM. BU. INSP.							
INSPECTION	LLOYD'S INSP.							
INSPECTION	U.S.M.A. INSP.		1		1	1	1	1
INSPECTION	U.S. NAVY INSP.							
INSPECTION	U.S.C.G. INSP.							
OFFICE	HULL DRAFT. - 21	1	1		1	1	1	1
OFFICE	MACH. DRAFT. - 22	2	2		2	2	2	2
OFFICE	ELEC. DRAFT. - 23	1	1		1	1	1	1
OFFICE	OUTFIT. DRAFT. - 25							
OFFICE	ESTIMATING							
OFFICE	[illegible]	1	1		1	1	1	1
MISC.	PRODUCTION (BCD)							
MISC.	ORDER DEPT.							
MISC.	JOINER CONT. YARD							
MISC.	[illegible] PLANNING	2						
	TOTAL ENG'R. DIST.	19	21	5	7	21	19	20
	YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
YARD	UPO-OFFICE	1	1	1	1	1	1	
YARD	SHIP SUPT	2	1	1	1	1	1	
YARD	PIECE RATE - 11	1	1	1	1	1	1	
YARD	TEST DEPARTMENT							
YARD	HANS BUSCHOW	1	1	–	–	–		
YARD	PLANNING	1	1	1	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	2	2	2	
STRUCTURAL	35 DEPT	2	2	2	2	2	3	
STRUCTURAL	P. MCNAIR	1	1	1	1	1	1	
STRUCTURAL	BRUCE THOMPSON	1	1	–	–	–		
STRUCTURAL	NO. WAY							
STRUCTURAL	NO. WAY							
STRUCTURAL	NO. WAY							
STRUCTURAL	NO. WAY							
STRUCTURAL	STRUCT. SUPER.	2	2	2	2	2	2	
STRUCTURAL	OPTICAL DETAIL - 45	2	2	2	2	2	2	
STRUCTURAL	WET DOCK							
MACH'Y & OUTFIT.	PIPE SHOP - 52							
MACH'Y & OUTFIT.	OUTFIT. #1 PIER	1	1	1	1	1	1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52	2	2	2	2	2	2	
MACH'Y & OUTFIT.	BOILER SHOP - 58	1	1	1	1	1	1	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60	4	4	4	4	4	4	
MACH'Y & OUTFIT.	Q-MAT'L	1	1	1	2	2	2	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70							
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74							
MACH'Y & OUTFIT.	COPPER SHOP - 81							
MACH'Y & OUTFIT.	PAINT SHOP - 78	1	1	1	1	1	1	
OTHER	WELDING							
OTHER	H. LEVY	1	1	1	1	1	1	
OTHER	MOLD LOFT - 41	1	1	1	1	1	1	
OTHER	BRACKET SHOP							
OTHER	QUALITY ASSURANCE		1	1	1	1	1	
	TOTAL YARD DIST.	[illegible]	[illegible]	[illegible]	[illegible]	27	27	

3

2

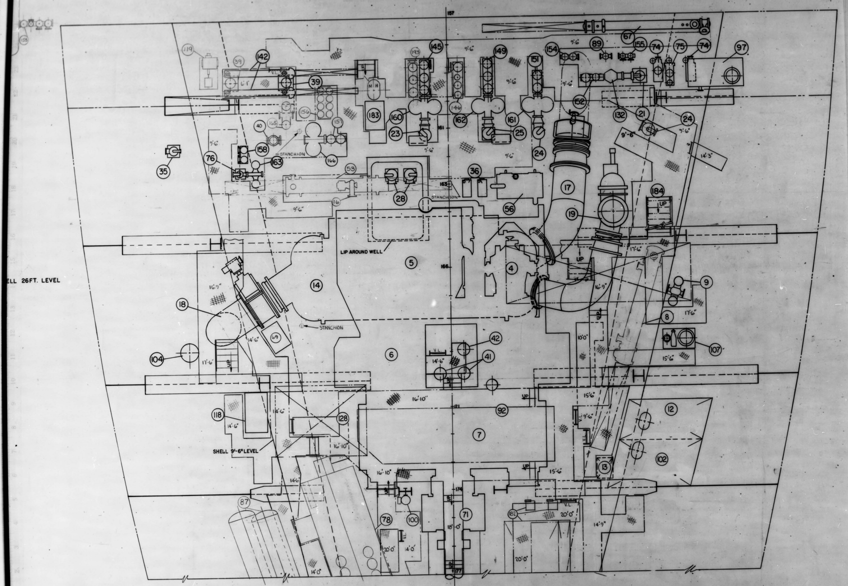
1

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 8X

BUILDERS PLAN NO. M4650-111-2

FRAME 1 OF 8



ELL 26FT. LEVEL
SHELL 9'-6" LEVEL
LIP AROUND WELL
STANCHION
UP
V.L.
M.H.
157
161
163
166
171
174
177
9'-6"
6'-1"
14'-3"
16'-9"
14'-6"
17'-6"
16'-10"
10'-0"
15'-6"
18'-0"
20'-0"
14'-0"
14'-9"
4
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142
145
146
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152
154
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156
158
160
161
162
163
165
166
182
183
184
193

LOWER LEVEL FWD

NO.	NO./SH.	ITEM
1	1	HOT WAT. STOR. TK. & HEAT.
2	3	MACH. SPACE SUPP. FAN
2A	1	MACH. SPACE SUPP. FAN FOR REFRIG. MACH. SPACE
3	2	MACH. SPACE EXH. FAN
4	1	H.P. TURBINE
5	1	L.P. TURBINE
6	2	FIRST REDUCTION GEAR
7	1	SECOND REDUCTION GEAR
8	1	L.O. COOLER
9	1	MAIN L.O. STRAIN. (DUPLEX) DISCHARGE
10	1	L.O. SUMP TANK
11	1	L.O. STORAGE TK.
12	1	L.O. SETTLING TK.
13	1	SLUDGE TANK
14	1	MAIN CONDENSER
15	1	D.O. TRANSFER PUMP
16	1	GLAND LEAK. EXHAUST.
17	1	INLET SCOOP
18	1	OVERBOARD DISCH.
19	1	MAIN CIRC. PUMP
20	1	L.O. COOLER (DIES. GEN.)
21	1	FIRE & TK. WASH. P.
22	2	CONSOLE (CARGO REFRIG.)
23	1	BILGE PUMP
24	2	SALT WATER SERV. P.
25	1	BILGE, BALL. & S.W. SERV. P.
26	1	E.R. BILGE SUMP P.
27	2	PRIMING PUMP
28	2	MAIN CONDENSATE P.
29	1	F.W. HEAT EXCH. (DIES. GEN.)
30	2	MAIN FEED PUMP
31	1	PORT FEED PUMP
32	2	DOMESTIC WATER P.
33	1	H.W. CIRC. PUMP
34	1	I.W. CIRC. PUMP
35	1	S.W. OVB'D P. (BRINE-DIST.)
36	2	ATMOS. DRAIN PUMP
37	2	VACUUM PUMP-MN. CONDENSER
38	1	L.O. FILTER (DIES. GEN.)
39	2	F.O. SERVICE P.
40	1	F.O. TRANSFER P.
41	2	L.O. SERVICE PUMP
42	1	EMER. L.O. PUMP
43	2	MAIN AIR COMP.
44	1	CONTROL AIR COMP.
45	1	D.O. DAY TANK
46	1	S.S. AIR TANK
47	1	CONTROL AIR TANK
48	1	CARGO REFRIG. PUMP OUT RECEIVER
49	2	MAIN BOILER
50	2	AIR HEATER
51	2	FORCED DRAFT FAN
52	1	D.C. HEATER

6 5 4 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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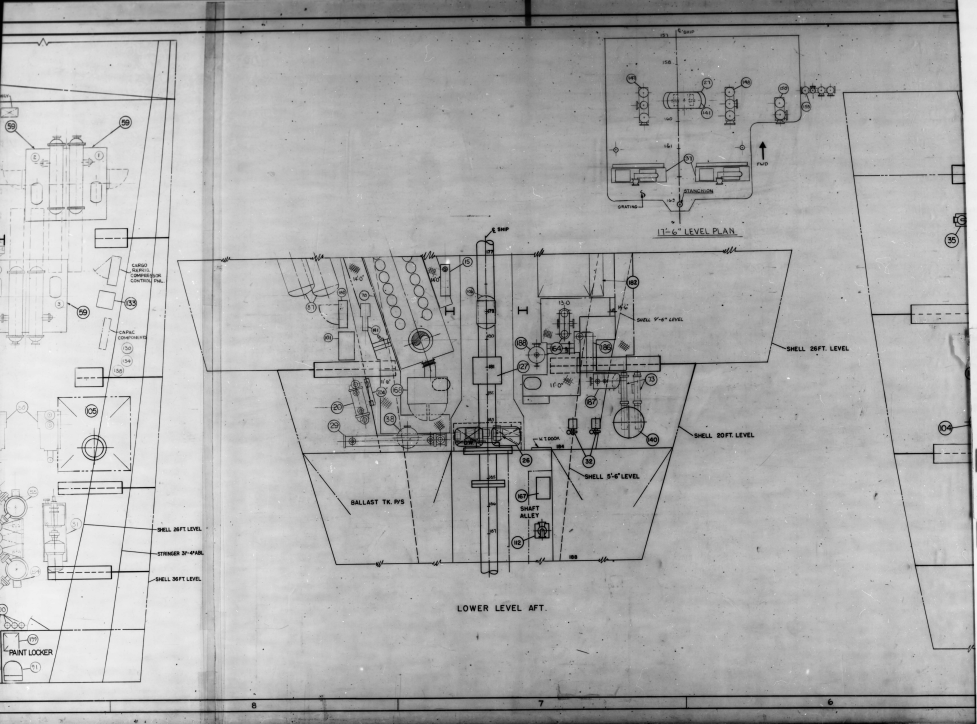
FRAME 2 OF 8


17'-6" LEVEL PLAN
℄ SHIP
FWD
STANCHION
GRATING
157
158
160
161
163
147
27
141
148
150
155
37
LOWER LEVEL AFT
℄ SHIP
177
179
180
181
182
183
184
185
186
187
188
15
106
87
180
78
191
101
14'0"
14'-0"
11'-6"
13-0
14'-6"
11'-0"
SHELL 9'-6" LEVEL
SHELL 26FT. LEVEL
SHELL 20FT. LEVEL
SHELL 5'-6" LEVEL
W.T. DOOR
182
188
164
186
127
73
187
140
32
26
168
204
20
29
38
BALLAST TK. P/S
SHAFT ALLEY
167
112
59
CARGO REFRIG. COMPRESSOR CONTROL PNL.
133
CAPAC COMPONENTS
130
134
138
105
30
55
54
31
SHELL 26FT. LEVEL
STRINGER 31'-4" ABL
SHELL 36FT. LEVEL
199
PAINT LOCKER
91
35
104
8
7
6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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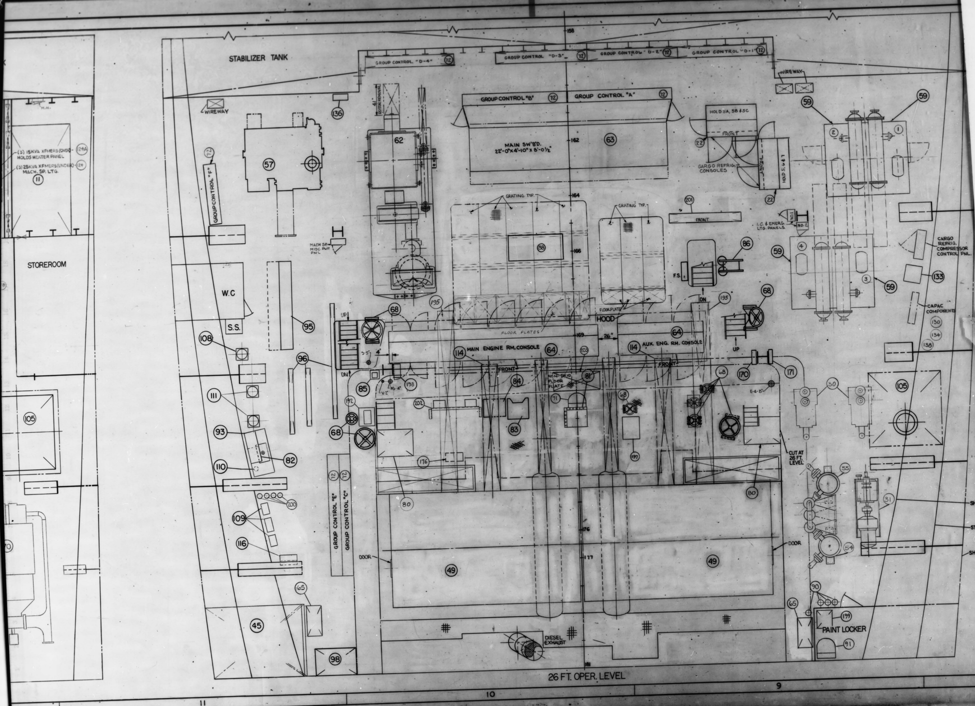
FRAME 3 OF 8


STABILIZER TANK
GROUP CONTROL "D-4" 72
GROUP CONTROL "D-3" 72
GROUP CONTROL "D-2" 72
GROUP CONTROL "D-1" 72
GROUP CONTROL "B" 72
GROUP CONTROL "A" 72
WIREWAY
WIREWAY
136
41" ROTOR REMOVAL
62
57
MAIN SW'B'D.
22'-0"x4'-10"x8'-0½"
63
HOLD 5A, 5B & 5C
FRONT
22
CARGO REFRIG. CONSOLES
HOLD 5, 6 & 7
22
59
59
(3) 15KVA XFMERS (OVER) 124A
HOLDS HEATER PANEL
(3) 25KVA XFMERS (UNDER) 124
MACH. SP. LTG.
11
GROUP CONTROL "F" 72
STOREROOM
MACH SP. MISC PWR PNL
GRATING TYP.
GRATING TYP.
58
201
FRONT
I.C. & EMERG. LTG. PANELS
NO. 1
CARGO REFRIG. COMPRESSOR CONTROL PNL.
86
F.S.
59
59
133
W.C
S.S.
95
68
195
195
DN
68
FLOOR PLATE
FLOOR PLATES
HOOD
64
CAPAC COMPONENTS
130
134
138
108
UP
UP
MAIN ENGINE RM. CONSOLE
64
26"
AUX. ENG. RM. CONSOLE
114
114
FRONT
FRONT
96
DN
203
NON-SKID FLOOR PLATE
81
68
170
171
E-4-8"
30
105
111
85
198
202
84
91
68
105
192
83
197
68
93
82
68
CUT AT 26 FT. LEVEL
110
176
GROUP CONTROL "E" 72
GROUP CONTROL "C" 72
80
80
55
200
51
109
SHELL
STRINGER
116
DOOR
DOOR
49
49
54
SHELL 3
45
65
65
90
199
PAINT LOCKER
91
DIESEL EXHAUST
98
156
162
164
166
169
176
177
181
26 FT. OPER. LEVEL
11
10
9

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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Oct 1980 8X

BUILDERS PLAN NO. M4650-111-2

FRAME 4 OF 8

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-2

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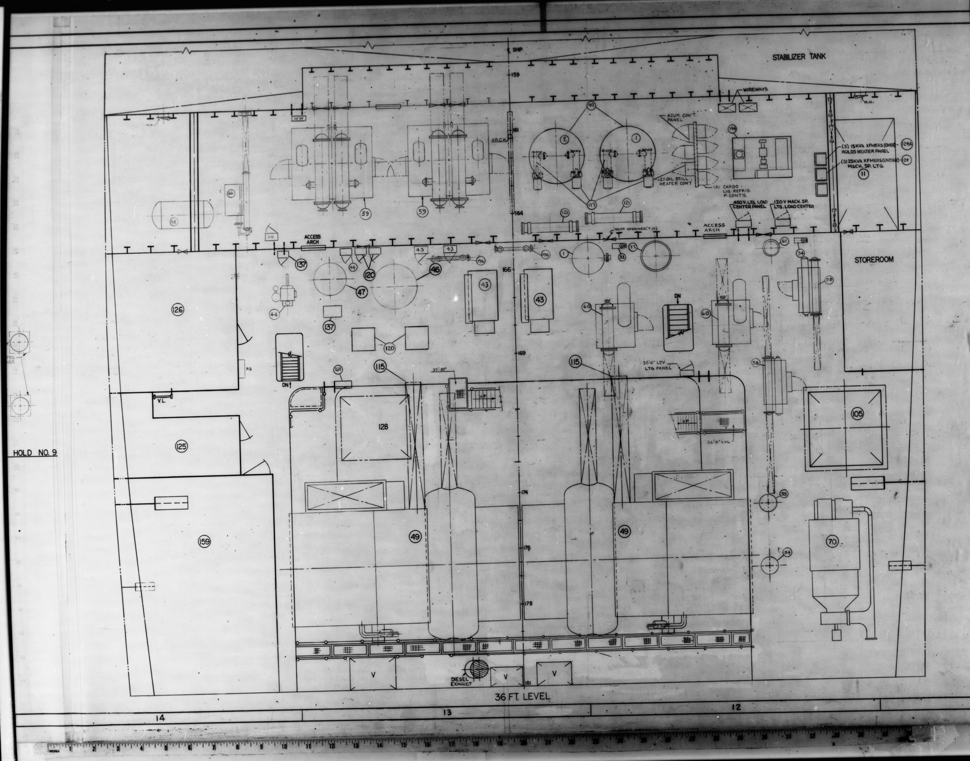
8X

FRAME 5 OF 8



STABILIZER TANK
℄ SHIP
WIREWAYS
M.H.
ACUM. CON'T. PANEL
(2) OIL STILL HEATER CON'T
(4) CARGO LIQ. REFRIG. P. CONT'S.
(3) 15KVA XFMERS (OVER) - HOLDS HEATER PANEL
(3) 25KVA XFMERS (UNDER) - MACH. SP. LTG.
124A
124
450 V. LTG. LOAD CENTER PANEL
120 V MACH. SP. LTG. LOAD CENTER
VENT OPENINGS (TYP)
ACCESS ARCH
ARCH
WW
STOREROOM
36'-0" LEV LTG PANEL
36'-0" LVL
37'-10"
UP
DN
V.L.
F.S.
HOLD NO. 9
DIESEL EXHAUST
V
36 FT. LEVEL
159
161
164
166
169
174
176
178
181
1
2
11
33
34
43
44
46
47
48
49
54
55
58
59
60
61
66
70
77
99
105
115
117
120
121
125
126
128
137
159
169
194
196
14
13
12

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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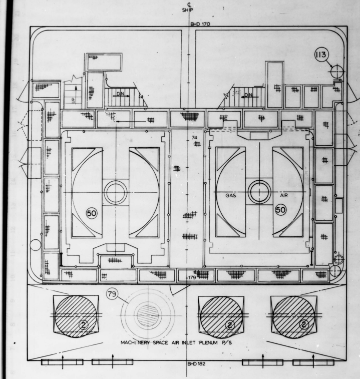
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

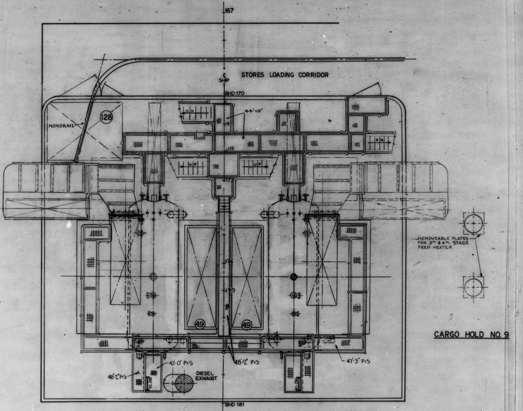
8X

BUILDERS PLAN NO. M4650-111-2

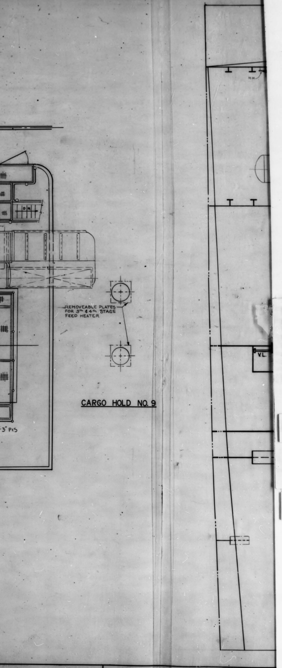
FRAME 6 OF 8


℄ SHIP
BHD 170
113
UP
DN
DN
74
GAS
AIR
50
50
179
79
2
2
2
MACHINERY SPACE AIR INLET PLENUM P/S
BHD 182

MAIN DECK


167
STORES LOADING CORRIDOR
℄ SHIP
BHD 170
MONORAIL
128
DN
44'-10"
171
172
UP
UP
173
DN
176
177
49
49
43'-0" P+S
48'-2" P+S
48'-2" P+S
47'-3" P+S
DIESEL EXHAUST
BHD 181
REMOVEABLE PLATES FOR 3rd & 4th STAGE FEED HEATER
CARGO HOLD NO. 9

2ND DECK
AFT


MH
V.L.

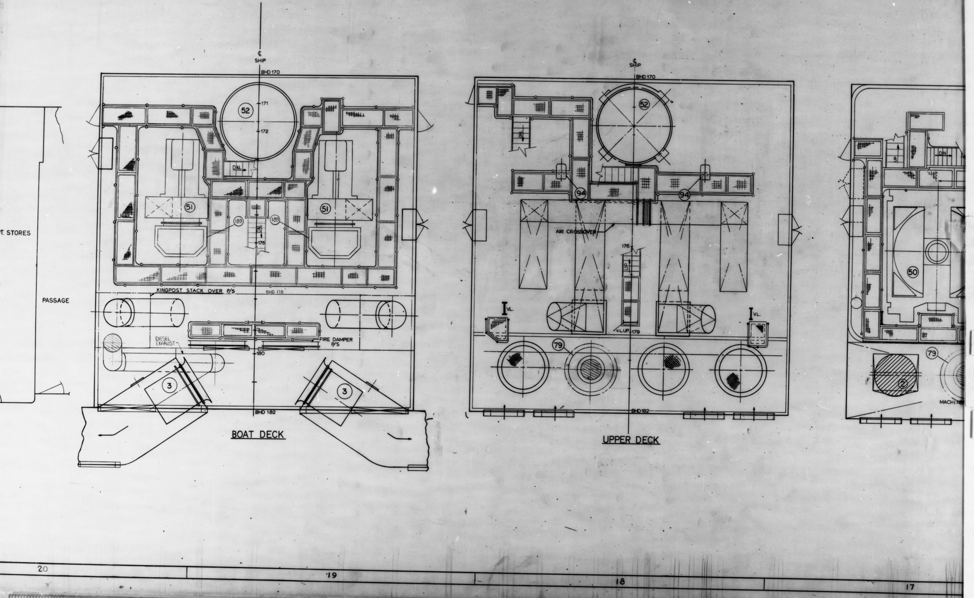
17
16
15
14

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 8X

BUILDERS PLAN NO. M4650-111-2

FRAME 7 OF 8


T. STORES
PASSAGE
℄ SHIP
BHD 170
171
172
52
D.N.
51
189
176
KINGPOST STACK OVER P/S
BHD 178
DIESEL EXHAUST
FIRE DAMPER P/S
180
3
BHD 182
BOAT DECK
94
AIR CROSSOVER
UP
V.L.
V.L. UP 179
79
UPPER DECK
50
2
MACHI
20
19
18
17

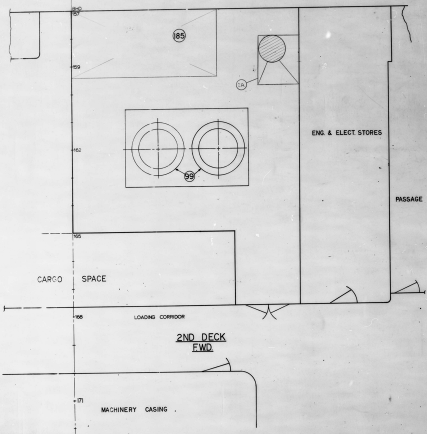
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-2

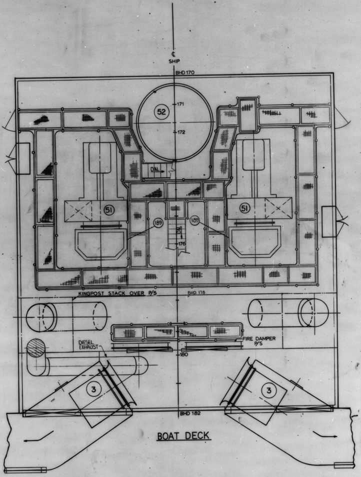
Oct 1980

8X

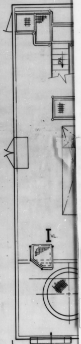
FRAME 8 OF 8


BHD 157
185
159
1A
162
99
ENG. & ELECT. STORES
PASSAGE
165
CARGO SPACE
168
LOADING CORRIDOR
171
MACHINERY CASING

2ND DECK FWD.


℄ SHIP
BHD 170
52
171
172
DN.
51
51
189
189
176
KINGPOST STACK OVER P/S
BHD 178
FIRE DAMPER P/S
DIESEL EXHAUST
180
3
3
BHD 182

BOAT DECK


DN
I VL.

21
20
19

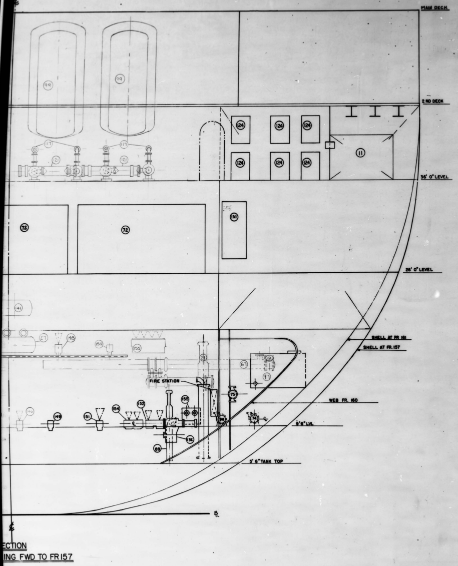
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-3

Oct 1980

8X

FRAME 1 OF 5



ECTION
ING FWD TO FR157

ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	2-25-77	10 AWL	1-ADDED PLATFORM & VERTICAL LADDER FOR ACCESS TO BURNER FRONT. 2-REVISED SECTIONS & ELEVATIONS TO COMPLY WITH ALT. NO. 1 OF DWG. M-4650-111-2.	PCG	G.G.S. LTR DATED 5-13-77
2	6-7-77	6 4	1. SECT FR 161 LKG AFT TO FR 166 9'-6" LVL INDICATE NO. 76 TO EVAP FEED WTR PUMP & DELETED ITEM NO. 129 ON 26'-0" LVL 2. SECT FR 161 LKG FWD TO FR 157 ON 21'-0" LVL DELETE ITM NO. 129 ALL TO COMPLY WITH ALT NO. 2 OF DWG. M-4650-111-2	AG	G.G.SHARP LTR. DATED 7-28-77
		9	3 SECT FR 166 LKG AFT TO FR 174 36'-0" LVL RELOCATED ITMS 115 & DELETED LADDER ON STBD SIDE & LOCATED NEW LADDERS P/S TO SUIT GRATING ON 2ND DK 26'-0" LVL ADDED ITM 195, RELOCATED ITM 114, MODIFIED & RELOCATION OF LADDERS AT PLTF NO. 80 MODIFIED DK BM AT 36'-0" LVL TO SUIT SOOT BURNERS RELOCATED ITMS 176, 139, 181 AS INDICATED ITEM NO. 3 MADE TO SUIT FINAL LOCATION OF EQUIPT AS SHOWN ON WORKING DWGS.	AG	
3	9-9-77		IN PLAN TITLE: DELETED THE WORD "PRELIMINARY" IN ACCORDANCE WITH COMMENT NO. 20 OF B.S.C. LTR. DATED 8 MARCH 1977 FILE 4650 111-D 2214 AND REVISED DRWG TO SUIT AS FOLLOWS: 1. SEE REF. NO. 1	G.L.W.	G.G.S. LTR 5587 DATED OCT. 13, 1977
4	3-30-78	6, 7, 9	1. REVISED DRWG TO AGREE WITH ALT. 4 OF REF. NO. 1	G.L.W.	4-4-78 gga

4651			
4650	27,340 DWT CONTAINERSHIP		8450
HULL	DESIGN		CHARGE
		JOB NO.	

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 21 DEC. 1976
DRAWN F. J. DUERBECK
APPROVED
TRACED
APPROVED
CHECKED JEW
APPROVED HGJC

PLAN NO. M-4650-111-3
ALT. NO. 4

ARRG'T. OF MACHINERY SECTIONS

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	2-9-77				
A.B.S.	12-1-77				
U.S.C.G.	10-17-77				
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				

NO.	PLAN NO.	TITLE
2	M-4650-111-4	ARRG'T. OF MACHINERY - ELEVATIONS & SECTIONS
1	M-4650-111-2	ARRG'T. OF MACHINERY - PLAN VIEWS - & LIST OF EQUIP.

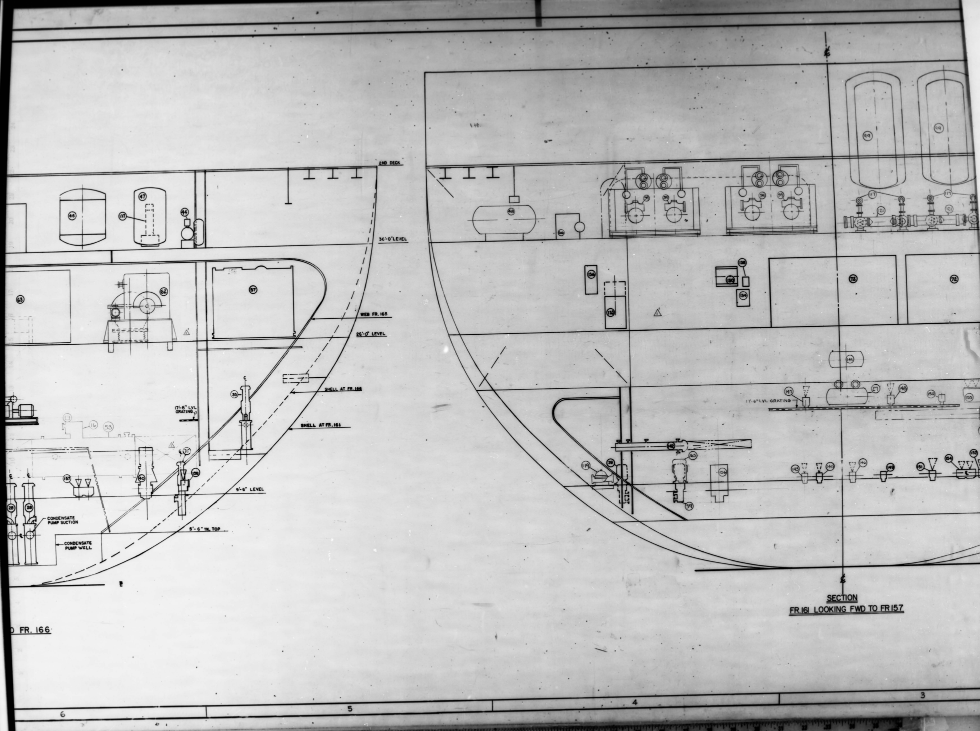
REFERENCE PLANS

KEY PLAN

		4650-51	4650-51 REPL.	4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
		DATE OF ISSUE					
	ALTERATION	0	1	2	2	3	4
	ENGINEERING DISTRIBUTION	1-3-77	4-25-77	6-24-77	7-5-77	9-14-77	4-14-78
MAIL	OWNERS	5	5	5		5	3
	AMERICAN BUREAU	3	3			3	3
	LLOYD'S R.S.						
	U.S.M.A.		3			3	3
	U.S NAVY						
	U.S.C.G.	3	3			3	3
	JOINER CONT'R.						
INSPECTION	OWNER'S INSP.	1	1		1	1	1
	AB. BU. INSP.						
	LLOYD'S INSP.						
	U.S.M.A. INSP.		1		1	1	1
	U.S. NAVY INSP.						
	U.S.C.G. INSP.						
OFFICE	HULL DRAFT. - 21	1	1		1	1	1
	MACH. DRAFT. - 22	3	2		2	2	2
	ELEC. DRAFT. - 23	1	1		1	1	1
	OUTFIT. DRAFT. - 25						
	ESTIMATING						
	DOUGHERTY-CTD	1	1		1	1	1
MISC.	PRODUCTION (BCD)						
	ORDER DEPT.						
	JOINER CONT. YARD						
	WILLIAMS-PLANNING	2					
	TOTAL ENG'R. DIST.	19	21	5	7	21	19
	YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
YARD	UAO	1	1	1	1	1	
	GEO ANSTBURG	2	1	1	1	1	
	PIECE RATE - 11	1	1	1	1	1	
	TEST DEPARTMENT						
	HANS RAECHEN	1	1	1	-	-	
	[illegible] PLANNING	1	1	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	2	2	
	35 DEPT.	2	2	2	2	2	
	BRUCE THOMAS	1	1	-	-	-	
	P. McNAIR	1	1	1	1	1	
	NO. WAY						
	NO. WAY						
	NO. WAY						
	NO. WAY						
	STRUCT. SUPER.	2	2	2	2	2	
	OPTICAL DETAIL - 40	2	2	2	2	2	
	WET DOCK						
MACH'Y & OUTFIT.	PIPE SHOP - 52						
	OUTFIT. #1 PIER	1	1	1	1	1	
	PIPE DRAFT. - 52	2	2	2	2	2	
	BOILER SHOP - 58	1	1	1	1	1	
	OUTSIDE MACH. - 60	4	4	4	4	4	
	Q-MAT C	1	1	1	2	2	
	ELECTRIC SHOP - 70						
	SHEET MET. SHOP - 74						
	COPPER SHOP - 51						
	PAINT SHOP - 75	1	1	1	1	1	
OTHER	WELDING						
	H. LEVY	1	1	1	1	1	
	MOLD LOFT - 41	1	1	1	1	1	
	BRACKET SHOP						
	QUALITY ASSURANCE	1	1	1	1	1	
	TOTAL YARD DIST.	29	30	26	27	27	

4650-51 - ALT. 0
4650-51 - ALT. 1
ALT. 2
ALT. 3
ALT. 4

3
2
1
M-555
31.5 SQ. FT.


2ND DECK
36'-0" LEVEL
WEB FR. 165
25'-0" LEVEL
SHELL AT FR. 166
17'-6" LVL GRATING
SHELL AT FR. 161
9'-6" LEVEL
CONDENSATE PUMP SUCTION
CONDENSATE PUMP WELL
5'-6" TK. TOP
D FR. 166
17'-6" LVL GRATING
46
47
137
44
63
62
57
35
16
53
157
28
28
40
70
158
48
66
99
99
117
121
72
72
136
133
138
130
134
141
27
147
148
150
153
142
165
119
39
154
145
146
149
151
152
6
5
4
3

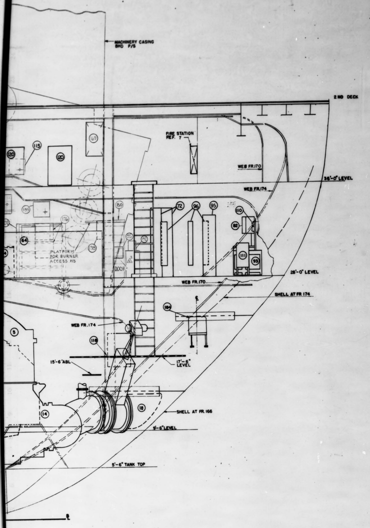
SECTION
FR.161 LOOKING FWD TO FR157

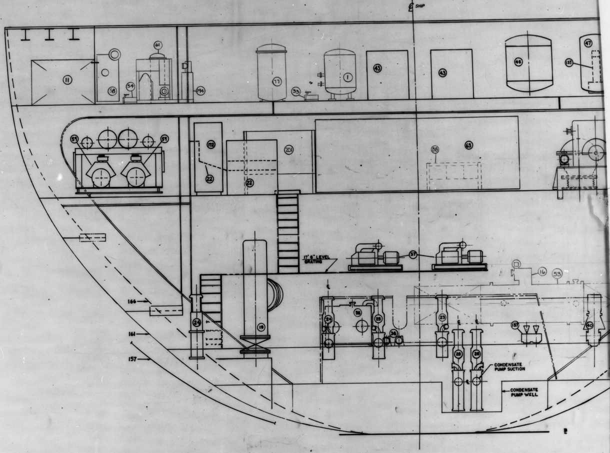
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
1400 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-3

FRAME 2 OF 5

Oct 1980 8X


MACHINERY CASING BHD P/S
2 ND DECK
FIRE STATION REF. 7
WEB FR.170
36'-0" LEVEL
WEB FR.174
169
115
120
120
195
80
72
96
95
110
82
176
64
198
65
192
111
93
PLATFORM FOR BURNER ACCESS P/S
DOOR
26'-0" LEVEL
WEB FR.170
SHELL AT FR 174
104
℄
WEB FR.174
5
116
15'-6" ABL
17'-6" LEVEL
14
18
SHELL AT FR.166
9'-6" LEVEL
5'-6" TANK TOP
℄


℄ SHIP
61
11
58
54
194
77
33
1
43
43
46
47
137
51
51
172
22
22
201
88
63
17'-6" LEVEL GRATING
37
16
53
166
24
19
24
36
25
36
23
157
40
161
157
28
28
CONDENSATE PUMP SUCTION
CONDENSATE PUMP WELL

SECTION
FR.161 LOOKING AFT. TO FR. 166

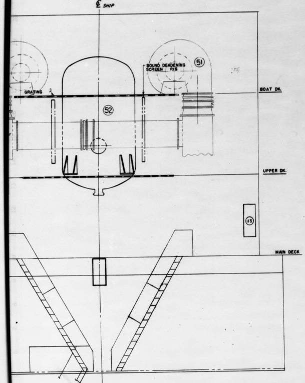
9 8 7 6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

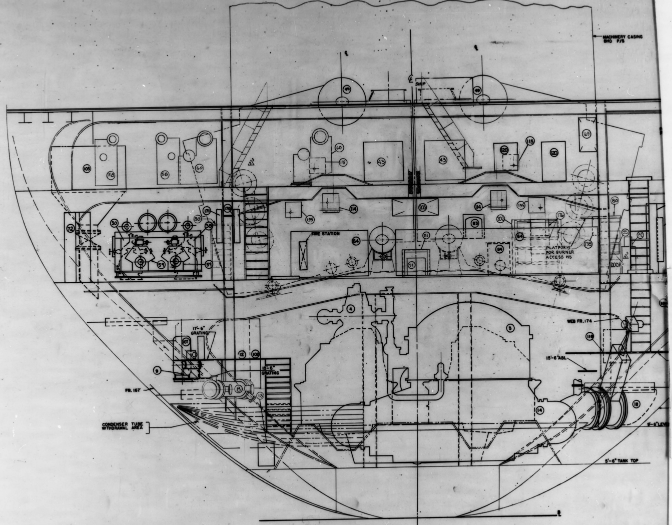
BUILDERS PLAN NO. M4650-111-3

Oct 1980 8X

FRAME 3 OF 5


℄ SHIP
SOUND DEADENING SCREEN P/S
51
GRATING
BOAT DK.
52
UPPER DK.
113
MAIN DECK

SECTION
FR. 174 LOOKING FWD. TO FR. 170


MACHINERY CASING BHD P/S
℄
℄ SHIP
49
49
105
58
58
60
60
115
43
43
120
115
120
169
72
30
171
80
170
36
59
59
195
114
203
114
195
80
FIRE STATION
64
81
83
202
176
64
84
91
85
192
178
PLATFORM FOR BURNER ACCESS P/S
DOOR
4
5
WEB FR. 174
116
15'-6" ABL
17'-6" GRATING
107
12
108
9
15'-6" GRATING
FR. 167
8
13
14
18
9'-6" LEVEL
CONDENSER TUBE WITHDRAWAL AREA
5'-6" TANK TOP

SECTION
FR. 166 LOOKING AFT TO FR. 174

11

10

9

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
1400 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-3

Oct 1980 8X

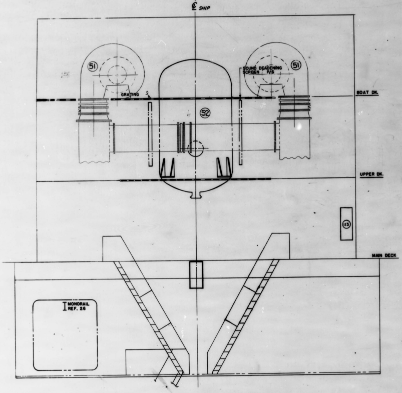
FRAME 4 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

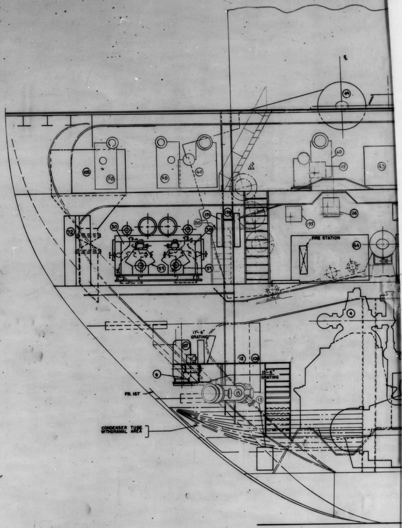
Oct 1980 8X

BUILDERS PLAN NO. M4650-111-3

FRAME 5 OF 5


℄ SHIP
51
51
SOUND DEADENING SCREEN P/S
GRATING
52
BOAT DK.
UPPER DK.
113
MAIN DECK
MONORAIL REF. 26

SECTION
FR.174 LOOKING FWD. TO FR.170


105
58
58
60
60
115
43
72
30
171
170
80
36
114
195
FIRE STATION
64
53
4
17'-6" GRATING
107
12
109
9
15'-6" GRATING
FR. 167
8
13
CONDENSER TUBE WITHDRAWAL AREA

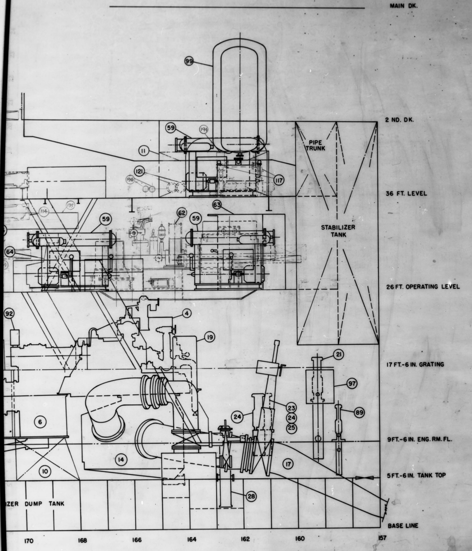
S
FR.166 LOO

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-4

Oct 1980 8X

FRAME 1 OF 5



ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	2-25-77	10,11 & 8 ALL	1 - IDENTIFIED ITEMS NO. 51 IN SECTION & ELEVATION. 2 - REVISED SECTIONS & ELEVATIONS TO COMPLY WITH ALT. NO. 1. OF DWG. M-4650-111-2.	PCG	G.G.S. LTR DATED 5-19-77
2	5-11-77	8	1. SECT FR 174 LKG AFT TO FR 84 RELOCATED ITEM NO. 73 TO COMPLY WITH ALT NO. 2 OF DWG M-4650-111-2		
	6-8-77	3	2 ELEV SECT IN PNL 3 AT 26'-0" LVL MODIFIED LOCATION OF ITM 114 & ADDED ITM. 195. ELEV. VIEW IN PNL 3 AT 36'-0" LVL RELOCATED LADDER AT FR 171		
		6-10	3. ELEV IN PNL 6 & SECT FR 174 LKG AFT TO FR 187, REVISED ENTIRE AREA TO AGREE WITH FINAL ARRGT OF UPTAKES & FORCED DRAFT SYSTEM	AG	G.G. SHARP LTR. DATED 7-28-77
		3	4. ELEV IN PNL 3 AT 36'-0" LVL FR 165 ADDED ITEM 196 ITEMS NO. 2 TO 4 MADE TO SUIT FINAL LOCATION OF EQUIPT AS SHOWN ON WORKING DWGS		
3	9-9-77	1	IN PLAN TITLE DELETED THE WORD "PRELIMINARY" IN ACCORDANCE WITH COMMENT NO. 20 OF B.S.C. LTR. DATED 8 MARCH 1977. FILE 4650/111-D/2214 AND REVISED DRWG TO SUIT AS FOLLOWS: 1. SEE REF. NO. 1	G.I.W.	G.G. SHARP LTR. NO. 5587/540 DATED OCT. 13 1977
4	3-30-78	4	1. REVISED DRWG. TO AGREE WITH ALT. 4 OF REF. 1	G.I.W.	4-4-78 [illegible]

HULL	DESIGN	CHARGE
4651	↑	↑
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 21 DEC. 1976
DRAWN F. J. DUERBECK APPROVED
TRACED APPROVED
CHECKED J.S.W. APPROVED HBUK

PLAN NO. M-4650-111-4 ALT. NO. 4

ARRG'T. OF MACHINERY ELEVATIONS AND SECTIONS

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	2-9-77				
A.B.S.	12-1-77				
U.S.C.G.	10-17-77				
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				

NO.	PLAN NO.	TITLE
2	M-4650-111-3	ARRG'T. OF MACHINERY - SECTIONS
1	M-4650-111-2	ARRG'T. OF MACHINERY - PLAN VIEWS & LIST OF EQUIP.

REFERENCE PLANS

KEY PLAN

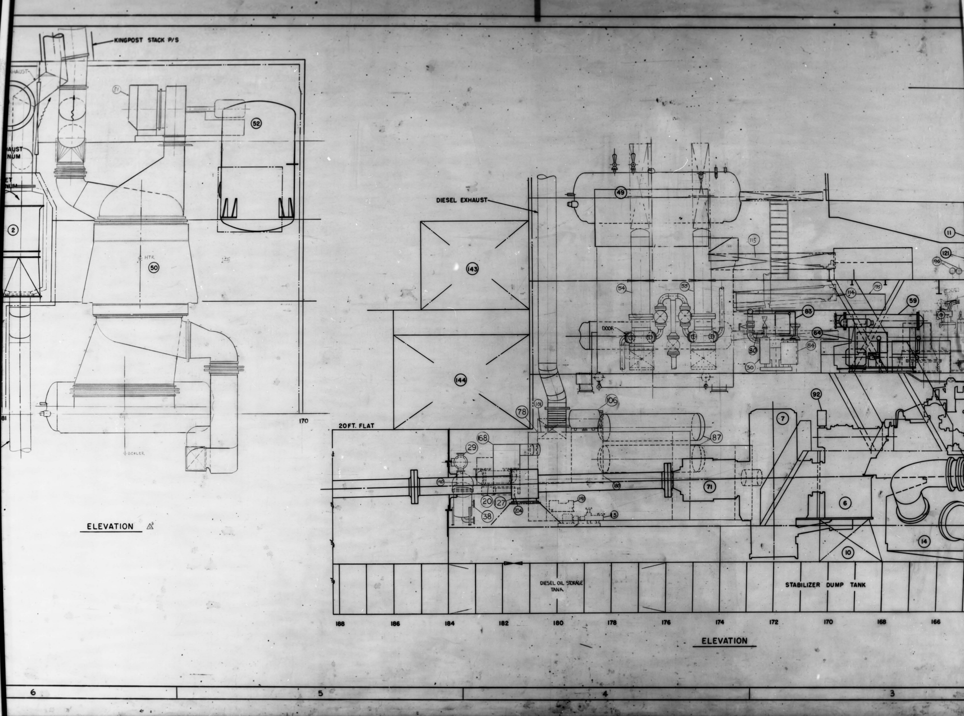
4650-51
4650-51 REPL.
4650-51
4650-51 REPL.
4650-51 REPL.
4650-51 REPL.

	DATE OF ISSUE					
ALTERATION	0	1	2	2	3	4
ENGINEERING DISTRIBUTION	1-3-77	4-15-77	6-24-77	7-5-77	9-19-77	4-14-78
OWNERS	5	5	5		5	3
AMERICAN BUREAU	3	3			3	3
LLOYD'S R.S.						
U.S.M.A.		3			3	3
U.S. NAVY						
U.S.C.G.	3	5			3	3
JOINER CONT'R.						
OWNER'S INSP.	1	1		1	1	1
AM. BU. INSP.						
LLOYD'S INSP.						
U.S.M.A. INSP.		1		1	1	1
U.S. NAVY INSP.						
U.S.C.G. INSP.						
HULL DRAFT. - 21	1	1		1	1	1
MACH. DRAFT. - 22	2	2		2	2	2
ELEC. DRAFT. - 23	1	1		1	1	1
OUTFIT. DRAFT. - 25						
ESTIMATING						
[illegible]	1	1	1	1	1	1
PRODUCTION (BCD)						
ORDER DEPT.						
JOINER CONT. YARD						
[illegible] PLANNING	2					
TOTAL ENG'R. DIST.	19	21	5	7	21	19
YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	1	1	1	1	1	
GEO. [illegible]	2	1	1	1	1	
PIECE RATE - 11	1	1	1	1	1	
TEST DEPARTMENT						
HAN RUSCHE [illegible]	1	1	–			
PLANNING	1	1	1	1	1	
GROUND ASSEMBLY	2	2	2	2	2	
[illegible] DEPT.	2	2	2	2	2	
[illegible]	1	1	–	–	–	
P. MCNAIR	1	1	1	1	1	
NO. WAY						
NO. WAY						
NO. WAY						
NO. WAY						
STRUCT. SUPER.	2	2	2	2	2	
OPTICAL DETAIL - 48	2	2	2	2	2	
WET DOCK						
PIPE SHOP - 52						
OUTFIT. #1 PIER	1	1	1	1	1	
PIPE DRAFT. - 52	2	2	2	2	2	
BOILER SHOP - 58	1	1	1	1	1	
OUTSIDE MACH. - 60	4	4	4	4	4	
GI-MAT'L	1	1	2	2	2	
ELECTRIC SHOP - 70						
SHEET MET. SHOP - 74						
COPPER SHOP - 51						
PAINT SHOP - 78	1	1	1	1	1	
WELDING						
H. LEVY	1	1	1	1	1	
MOLD LOFT - 41	1	1	1	1	1	
BRACKET SHOP						
QUALITY ASSURANCE	1	1	1	1	1	
TOTAL YARD DIST.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

3
2
1

M-556

32.0 SQ. FT.

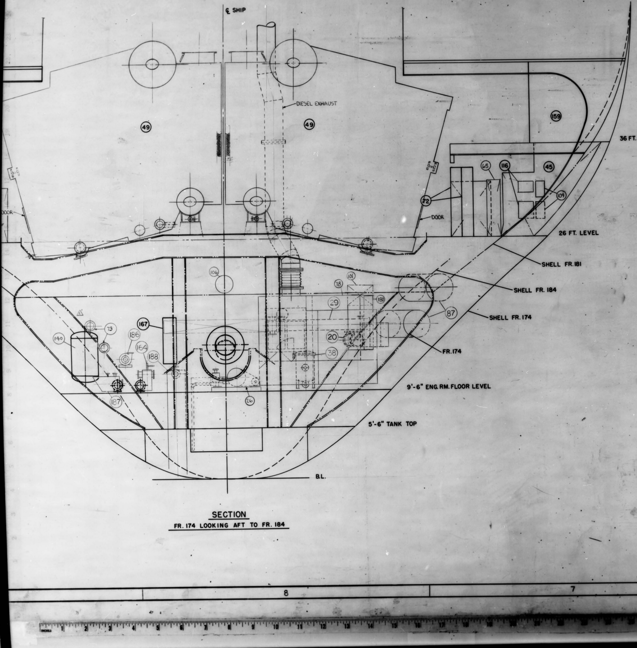

KINGPOST STACK P/S
EXHAUST
HAUST
NUM
ET
NUM
2
51
52
50
℄ HTR
℄ BOILER
181
170
ELEVATION
DIESEL EXHAUST
143
144
78
101
20 FT. FLAT
49
115
11
121
196
54
55
DOOR
83
59
114
195
64
80
84
50
92
7
106
87
168
29
190
180
71
6
20
127
204
191
15
38
10
14
DIESEL OIL STORAGE TANK
STABILIZER DUMP TANK
188
186
184
182
180
178
176
174
172
170
168
166
ELEVATION
6
5
4
3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-4

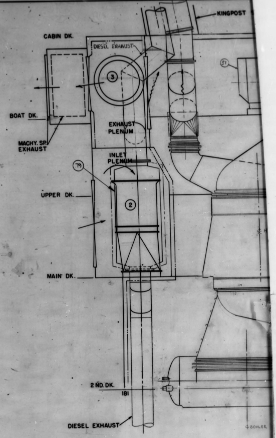
Oct 1980 8X

FRAME 2 OF 5


℄ SHIP
DIESEL EXHAUST
49
49
2 ND. DK.
159
36 FT. LEVEL
65
116
45
72
DOOR
DOOR
109
26 FT. LEVEL
SHELL FR. 181
SHELL FR. 184
SHELL FR. 174
FR. 174
106
101
18
29
180
87
167
73
140
186
164
188
20
38
187
26
9'-6" ENG. RM. FLOOR LEVEL
5'-6" TANK TOP
B.L.

SECTION

FR. 174 LOOKING AFT TO FR. 184


KINGPOST
CABIN DK.
DIESEL EXHAUST
3
51
BOAT DK.
MACHY. SP. EXHAUST
EXHAUST PLENUM
INLET PLENUM
79
2
UPPER DK.
MAIN DK.
2 ND. DK.
181
DIESEL EXHAUST
℄ BOILER

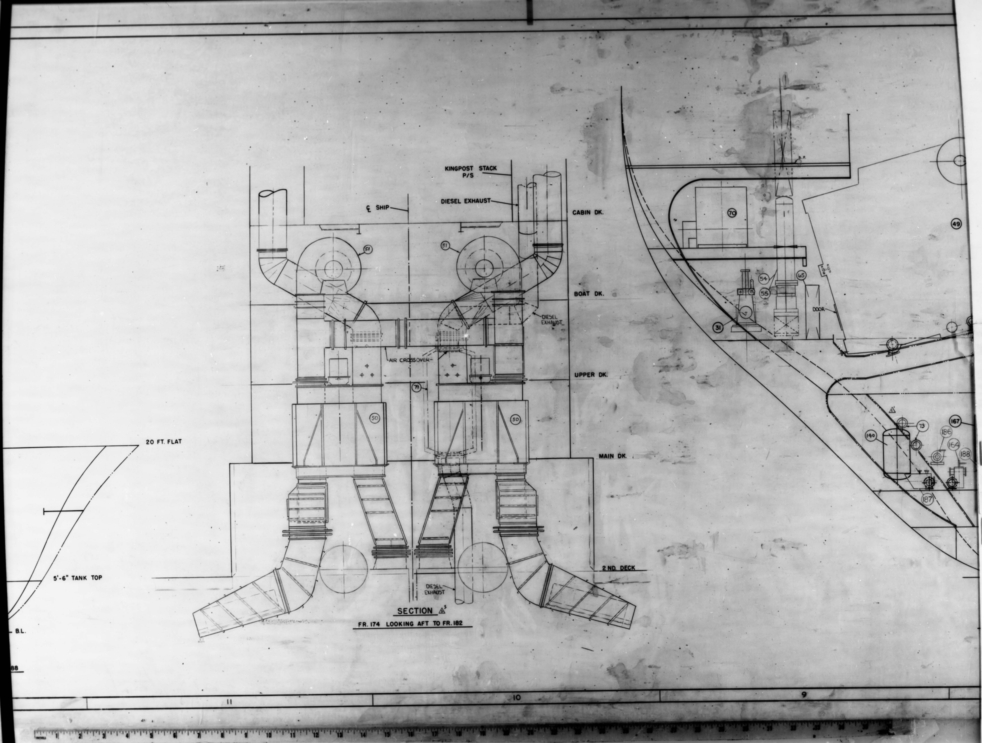
ELEVATION

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-4

Oct 1980 8X

FRAME 3 OF 5


KINGPOST STACK
P/S
DIESEL EXHAUST
℄ SHIP
CABIN DK.
BOAT DK.
UPPER DK.
MAIN DK.
2 ND. DECK
20 FT. FLAT
5'-6" TANK TOP
B.L.
88
AIR CROSSOVER
DIESEL EXHAUST
DIESEL EXHAUST
51
51
50
50
79
70
49
54
55
65
31
DOOR
140
73
186
164
188
167
187
11
10
9

SECTION △3

FR. 174 LOOKING AFT TO FR. 182

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-4

Oct 1980 8X

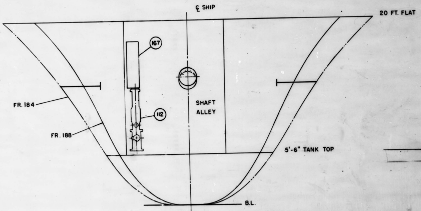
FRAME 4 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-4

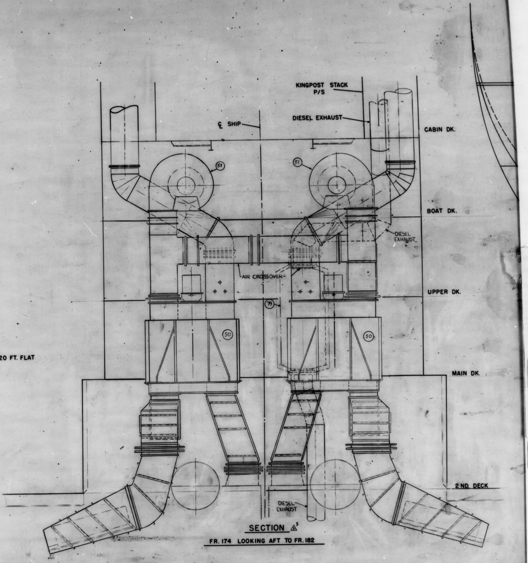
Oct 1980 8X

FRAME 5 OF 5


℄ SHIP
20 FT. FLAT
167
112
SHAFT ALLEY
FR. 184
FR. 188
5'-6" TANK TOP
B.L.

SECTION

FR 184 LOOKING AFT TO FR 188


KINGPOST STACK P/S
DIESEL EXHAUST
℄ SHIP
CABIN DK.
51
51
BOAT DK.
DIESEL EXHAUST
AIR CROSSOVER
UPPER DK.
79
50
50
MAIN DK.
2ND DECK
DIESEL EXHAUST

SECTION A3

FR. 174 LOOKING AFT TO FR. 182

ALTERATIONS

NO	DATE	ZONE	DESCRIPTION	MADE BY	APPV'D
1	7/28/78		1. PG. 1, IT. 2, "NORMAL EVAP." TO 93,700#/HR. 2. PG. 2, IT. 2, "TURNING" CORRECTED SPELLING 3. PG. 3, IT. 2, "FEED WATER" TO 188,530#/HR. 4. PG. 3, IT. 3, "FEED WATER" TO 188,530#/HR. 5. PG. 3, IT. 4, "1ST. STAGE FEED HTR." TO 147,200#/HR 6. PG. 3, IT. 2, 3, 4, 6, 9 & 11 WEIGHTS ADDED 7. PG. 5, IT. 2, 3, 4, 6, 7, 8, 11, 12, 13 & 14 "FT. HD." TO "P.S.I. HD." 8. PG. 6, IT. 10, 11, 12, 13, 14 & 15 "FT. HD." TO "P.S.I. HD." 9. WEIGHTS ADDED THROUGH-OUT 10. ABV. PER G.G.S. LTR. DATED 10/5/77, 5587/40 11. PG. 14, IT. 15 ADDED	RM	G.G. SHARP LTR. DATED 8-30-78
2	10/31/78		1. PG. 1, IT. 2, WATER HEATING SURFACE TO 7864□' 2. PG. 1, IT. 4, EST. WT. CORRECTED, "W/MOTOR" ADDED 3. PG. 2, IT. 3, INDICATED "DRY" WITH EST. WT. 4. PG. 3, IT. 2, 3, 4, 6, 9 & 11, INDICATED "FLOODED" WITH EST. WT. 5. PG. 3, IT. 5, 7, 8 & 10, INDICATED "DRY" WITH EST. WT. 6. PG. 3, IT. 2, STEAM PRESS. TO 316 PSIG. 7. PG. 3, IT. 10, VENDOR TO "ELECTRIC HEATER CO." 8. PG. 4, IT. 2, GPM TO 412/550, ADDED EXH. PRESS. & RPM. 9. PG. 5, IT. 7, EST. WT. CORRECTED, "DRY W/MOTOR" ADDED, HEAD TO 350 PSIG, MOTOR HP ADDED. 10. PG. 5, IT. 8, EST. WT. CORRECTED, "DRY W/MOTOR" ADDED, HEAD TO 100 PSI, MOTOR HP ADDED. 11. PG. 5, IT. 9, EST. WT. CORRECTED, "DRY W/MOTOR" ADDED, DISCH. PRESS. & MOTOR HP ADDED. 12. PG. 5, IT. 10, EST. WT. CORRECTED, "DRY W/MOTOR" ADDED, DISCH. PRESS. & MOTOR HP ADDED.	RM	

~ CONT. ON NEXT PAGE ~

KEY PLAN

4651	↑ ↑ ↑	↑
4650	27,340 DWT CONTAINERSHIP	8450
HULL	**DESIGN**	**CHARGE**

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ~ DATE 9-2-77
DRAWN B. BAKER APPROVED
TRACED APPROVED
CHECKED REM APPROVED HBR

PLAN NO. M-4650-111-5 ALT. NO. 2

MACHINERY LIST

	APPROVAL LETTERS				
HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	10-5-77				
A.B.S.	12-1-77				
U.S.C.G.	9-23-77				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

		DATE OF ISSUE 4650-51	4650-51 REPL.	4650-51 REPL.
	ALTERATION	0	1	2
	ENGINEERING DISTRIBUTION	9-6-77	8-3-78	11-6-78
MAIL	OWNERS	5	5	5
MAIL	AMERICAN BUREAU	3	3	3
MAIL	LLOYD'S R.S.			
MAIL	U.S.M.A.	3	3	3
MAIL	U.S. NAVY			
MAIL	U.S.C.G.	3	3	3
MAIL	JOINER CONT'R.			
MAIL				
INSPECTION	OWNER'S INSP.		1	1
INSPECTION	AM. BU. INSP.			
INSPECTION	LLOYD'S INSP.			
INSPECTION	U.S.M.A. INSP.		1	1
INSPECTION	U.S. NAVY INSP.			
INSPECTION	U.S.C.G. INSP.			
INSPECTION				
OFFICE	HULL DRAFT. - 21	1	1	1
OFFICE	MACH. DRAFT. - 22	2	2	2
OFFICE	ELEC. DRAFT. - 23	1	1	1
OFFICE	OUTFIT. DRAFT. - 25			
OFFICE	ESTIMATING			
OFFICE	DOUGHERTY - CTD	1	1	1
MISC.	PRODUCTION (BCD)			•
MISC.	ORDER DEPT.			
MISC.	JOINER CONT. YARD			
MISC.	WILLIAMS - PLANNING	2		
	TOTAL ENG'R. DIST.	21	21	21
	YARD DISTRIBUTION	8 3 78	11 15 78	
YARD	[illegible]URO - OFFICE	1	1	
YARD	J. SIMMONS	1	1	
YARD	PIECE RATE - 11	1	1	
YARD	TEST DEPARTMENT			
YARD	QUALITY ASSURANCE	1	1	
YARD	[illegible] PLANNING	1	1	
STRUCTURAL	GROUND ASSEMBLY	1	1	
STRUCTURAL	35 DEPT.	1	1	
STRUCTURAL	P. McNAIR	1	1	
STRUCTURAL	H. LEVY	1	1	
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	STRUCT. SUPER.	1	1	
STRUCTURAL	OPTICAL DETAIL - 45	2	2	
STRUCTURAL	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP - 52			
MACH'Y & OUTFIT.	OUTFIT. #1 PIER	1	1	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52	1	1	
MACH'Y & OUTFIT.	BOILER SHOP - 58	1	1	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60	4	4	
MACH'Y & OUTFIT.	Q - MAT'L.	2	2	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70			
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74			
MACH'Y & OUTFIT.	COPPER SHOP - 51			
MACH'Y & OUTFIT.	PAINT SHOP - 75	1	1	
OTHER	WELDING			
OTHER				
OTHER	MOLD LOFT - 41	1	1	
OTHER	BRACKET SHOP			
OTHER				
OTHER				
OTHER				
	TOTAL YARD DIST.	23	3	

M-557

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
2	10/31/78		13. PG. 5, IT. 11, EST. WT. CORRECTED, "DRY W/MOTOR" ADDED, HEAD TO 50 PSI. 14. PG. 7, IT. 6, CLASS TO 2½"-DDBS-3X. 15. PG. 7, IT. 7, EST. WT. CORRECTED, CLASS TO 4"-DDSX. 16. PG. 8, IT. 5, INLET PRESS. MAX. TO 1100 PSIG. 17. PG. 8, IT. 6, INLET PRESS. MAX. TO 110 PSIG, TEMP. MAX. TO 130°F. 18. PG. 9, IT. 2 & 3, OUTLET PRESS. ADDED. 19. PG. 9, IT. 4, CLASS TO GTS. 20. PG. 9, IT. 7, SIZE & CLASS 1½" DDL-3 ADDED, EST. WT. ADDED FOR 1½" DDL-3 ADDED. 21. PG. 10, IT. 9, DATA ADDED TO REMARKS 22. EST. WTS. ADDED. 23. PG. 26, IT. 9, 10 & 11 ADDED MOTORS. 24. ABV. PER G.G.S. LTR. 8-30-78, 5587/S40	RM	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-5

Oct 1980 6X

FRAME 1 OF 24

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-5

FRAME 2 OF 24

INDEX

EQUIPMENT	PAGE NO.	EQUIPMENT	PAGE NO.
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MAIN MACHINERY	2	ELECTRICAL EQUIP. & COMPRESSORS	18
HEAT TRANSFER EQUIPMENT	3	MOTORS	19 THRU 24
TURBINE & TURBINE DRIVEN PUMPS	4	MISCELLANEOUS EQUIPMENT	25, 26
MOTOR DRIVEN PUMPS	5, 6	FILTERS	27
VALVES	7, 8	DISTILLERS	28
TEMPERATURE REGULATORS	9	ENGINEERS EQUIPMENT	29
DRAIN REGULATORS & STRAINERS	10	CONTROLLERS	30 THRU 43
METERS, GAUGES & ALARMS	11	SPECIAL TANKS	44
HULL CASTINGS & FORGINGS	12	SEWAGE DISPOSAL PLANT	45
DECK MACHINERY	13		

41609 (Rev.A 4-69)
(OM QD 85)

HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	COMBUSTION EQUIPMENT													
2	MAIN BOILERS	2	△1 △2^1	4650 -1		6-16-76	22-50001	616-1505-W	FOSTER WHEELER CORP.	5-20-77			416,000#	TWO DRUM BENT TUBE, FORCED DRAFT MARINE WATER TUBE, 7,864 SQ. FT. OF WATER HEATING SURFACE, MAX. PRESS. 1100 PSIG, NORMAL EVAPORATION 93,700#/HR, MAX. 113,000#/HR.
3	FUEL OIL BURNERS	6		4650 -1		6-16-76	22-50001	616-1505-W	FOSTER WHEELER CORP.	5-20-77			INCL. IN BOILER	FORNEY MODEL M-18-3 BURNER REGISTERS & MODEL 66-D WIDE RANGE CONSTANT STEAM PRESSURE ATOMIZING OIL BURNERS
4	FORCED DRAFT BLOWERS	2	△2^2	4650 -58		9-3-76	22-50035	903-1507-W	BUFFALO FORGE CO.	10-1-77			5,000# w/MOTOR	CENTRIFUGAL SIZE 890, TYPE L33, HEAVY DUTY, ARRG'T. #8, SINGLE INLET, SINGLE WIDTH, CAPACITY 38,600 CFM, STATIC PRESSURE 27.9" H2O, SPEED 1800 RPM, 217 BHP
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41609 (Rev.A 4-69)
(Old QD 85)

HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	MAIN MACHINERY													
2	MAIN PROPULSION TURBINE & REDUCTION GEAR UNITS	1	△1^{2}	4650 -2		6-10-76	22-50002	610-1512-W	WESTINGHOUSE ELECTRIC CORP.	6-10-77			358,100#	CROSS COMPOUND, MARINE TYPE, ONE H.P. & L.P. TURBINE WITH ASTERN ELEMENT, CONNECTED THRU FLEXIBLE COUPLINGS TO A DOUBLE HELICAL ARTICULATED, DOUBLE REDUCTION GEAR, WITH TURNING GEAR
3	MAIN CONDENSER	1	△2^{3}	4650 -4		6-16-76	22-50004	616-1560-W	FOSTER WHEELER CORP.	9-2-77			84,800# DRY	REHEATING, STRAIGHT LINE, SURFACE TYPE, SINGLE PASS SCOOP CIRCULATION WITH AN AIR COOLING SECTION & A CONDENSATE HOTWELL, & WILL RECEIVE EXHAUST FROM THE MAIN TURBINE & THE TURBINE GENERATOR.
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(Old QD 85)

HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	HEAT TRANSFER EQUIP.													
2	3RD STAGE FEED HEATER	1	△1^{3,6} △2^{4,6}	4650 -5		8-23-76	22-50004C	823-1502-W	AQUA-CHEM INC.	7-1-77			8,950# FLOODED	MODEL 4-V-136-C, VERTICAL SHELL & U-TUBES, CAPACITY TO HEAT 188,530#/hr. OF FEED WATER FROM 287° F TO 364° F, WITH TUBE CLEANLINESS OF 90%, STEAM PRESSURE 316 PSIG
3	4TH STAGE FEED HEATER	1	△1^{4,6} △2^{4}	4650 -5		8-23-76	22-50004C	823-1502-W	AQUA-CHEM INC.	7-1-77			8,920# FLOODED	MODEL 4-V-133-C, VERTICAL SHELL & U-TUBES, CAPACITY TO HEAT 188,530#/hr. OF FEED WATER FROM 364° F TO 419° F. WITH TUBE CLEANLINESS OF 90%, STEAM PRESSURE 158 PSIG
4	1ST STAGE FEED HEATER, GLAND EXHAUST CONDENSER & DRAIN COOLER	1	△1^{5,6} △2^{4}	4650 -7		9-30-76	22-50004B	930-1502-W	MANNING & LEWIS ENGINEERING CO.	6-3-77			15,200# FLOODED	SIZE FTP8645-5, HORIZONTAL, STRAIGHT TUBE, COMBINED UNIT, CAPACITY TO HEAT 147,200#/hr. OF FEED WATER FROM 90° F TO 184.6° F WITH TUBE CLEANLINESS OF 90%
5	DEAERATING FEED WATER HEATER	1	△2^{5}	4650 -8		8-23-76	22-50006	823-1500-W	AQUA-CHEM INC.	4-30-77			11,500# DRY	MODEL 240 VERTICAL, SINGLE SHELL, SPRAY TYPE MARINE UNIT WITH AN INTERNAL DIRECT CONTACT VENT CONDENSER, FEED INLET CONDENSATE FLOW 149,500#/hr. FEED OUTLET MAX. FLOW 225,000#/hr.
6	MAIN LUBRICATING OIL COOLER	1	△1^{6} △2^{4}	4650 -9		9-30-76	22-50004D	930-1501-W	MANNING & LEWIS ENGINEERING CO.	6-3-77			5,326# FLOODED	NO. 20-120, SINGLE PASS, STRAIGHT, FINNED TUBE HEAT EXCHANGER, WILL COOL 400 GPM OF TURBINE LUBE OIL FROM 148° F TO 120° F WHEN SUPPLIED WITH 500 GPM OF 85° CIRCULATING SEA WATER
7	TANK CLEANING HEATER	1	△2^{5}	4650 -10		9-30-76	22-50009	930-1500-W	MANNING & LEWIS ENGINEERING CO.	6-3-77			1700# DRY	MODEL FTE-10-1446, HORIZONTAL STRAIGHT TUBE, SEAWATER WITHIN THE TUBES, WILL HEAT 300 GPM SEAWATER FROM 70° F TO 180° F WITH STEAM FLOW OF 19,000#/hr. @ 125 PSIG
8	DRAIN COOLER	1	△2^{5}	4650 -10		9-30-76	22-50009	930-1500-W	MANNING & LEWIS ENGINERING CO.	6-3-77			1200# DRY	MODEL FTE-10-666, HORIZONTAL STRAIGHT TUBE, SEAWATER WITHIN THE TUBES, DRAIN INLET TEMP. 353° F, DRAIN OUTLET TEMP 160° F, SEAWATER INLET TEMP. 45° F, SEAWATER OUTLET TEMP. 70° F
9	FUEL OIL HEATER	2	△1^{6} △2^{4}	4650 -47		8-23-76	22-50008	823-1501-W	AQUA-CHEM INC.	6-3-77			711# FLOODED	SIZE F-84DE19, HORIZONTAL BAYONET TUBE TYPE, STEAM WITHIN THE TUBES, CAPACITY, OIL, 300 SSF @ 122° F, 15,000#/hr., OIL INLET TEMP. 100° F, OIL OUTLET TEMP. 230° F.
10	HOT WATER HEATER	1	△2^{5,7}	4650 -49		2-10-77	22-50009C	210-1548-X	ELECTRIC HEATER CO.	8-5-77			3000# DRY	VERTICALLY MOUNTED TYPE WITH DISHED HEADS, STORAGE CAPACITY 300 GALS, 800 GPH, WATER INLET TEMP. 50° F, WATER OUTLET TEMP. 150° F
11	CARGO HEATING COIL HOT WATER HEATER	1	△1^{6} △2^{4}	4650 -15		8-23-76	22-50009B	823-1503-W	AQUA-CHEM INC.	6-3-77			480# FLOODED	MODEL 2H24C HORIZONTAL SHELL & U-TUBE, WATER WITHIN THE TUBES WILL HEAT 160 GPM WATER FROM 140° F TO 160° F, STEAM PRESSURE 36 PSIG
12														
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FRAME 3 OF 24

BUILDERS PLAN NO. M4650-111-5

Oct 1980 6X

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

AUTOMATION INDUSTRIES, INC.
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Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

FRAME 4 OF 24

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	TURBINES & TURBINE DRIVEN PUMPS													
2	MAIN FEED PUMPS	2	$\triangle 2^{8}$	4650 -13		6-17-76	22-50012C	617-1506-W	COFFIN TURBO PUMPS	7-1-77			4200#	CENTRIFUGAL TYPE DEB16, TWO STAGE DIFFUSER, WITH A SINGLE STAGE TWO ROW IMPULSE TURBINE ON A COMMON SHAFT, CAPACITY TO BOILER 412/550 GPM, INLET PRESSURE 845 PSIG @ 550° F, SPEED 7175/7670 RPM, EXHAUST PRESS. 43/45 PSIG.
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41609 (Rev.A 4-69)
(Old QD 85)

HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	MOTOR DRIVEN PUMPS													
2	TANK CLEANING PUMP (DEEPWELL)	1	$\triangle 1^{7}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			541#	MODEL 6M11-7, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 7 STAGE, CAPACITY 150 GPM @ 200 PSI HEAD, 3520 RPM, 24.6 BHP
3	EVAPORATOR FEED WATER PUMP (DEEP WELL)	2	$\triangle 1^{7}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			1,122#	MODEL 10M41-2, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 2 STAGE, CAPACITY 370 GPM @ 40 PSI HEAD, 1760 RPM. 11.3 BHP
4	EVAPORATOR SALT WATER OVERBOARD PUMP (DEEPWELL)	2	$\triangle 1^{7}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			1,168#	MODEL 10M41-2, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 2 STAGE, CAPACITY 350 GPM @ 35 PSI HEAD, 1760 RPM, 9.4 BHP.
5	MAIN CONDENSER VACUUM PUMP	2		4650 -6		8-6-76	22-50007	806-1509-W	NASH ENGINEERING CO.	6-3-77			2,384#	TYPE CL-105, CONICAL CENTRIFUGAL DISPLACEMENT TYPE, MOTOR DRIVEN THRU A FLEXIBLE COUPLING, HOLDING CAPACITY @ 1.5" Hg ABSOLUTE SHALL BE 4.5 SCFM, HOGGING CAPACITY SHALL BE 150 SCFM @ 15" HG. ABS
6	PORT FEED PUMP	1	$\triangle 1^{7}$	4650 -11		9-8-76	22-500011	908-1501-W	WORTHINGTON CORP.	6-3-77			4,600#	VERTICAL TRIPLEX PLUNGER TYPE RECIPROCATING PUMP ARRANGED FOR HORIZONTAL, GEAR MOTOR DRIVE, THRU A FLEXIBLE COUPLING, PUMP 248 RPM, 75 GPM, WATER TEMP 284° F, 15 PSI HEAD
7	FUEL OIL SERVICE PUMP (ROTARY)	2	$\triangle 1^{7}$ $\triangle 2^{9}$	4650 -20		8-10-76	22-500012D	810-1507-W	DE LAVAL TURBINE INC.	6-3-77			475# DRY W/MOTOR	MODEL G3DBCS-187, VERTICAL, IMO TYPE, WITH FLEXIBLE COUPLING, 2 SPEED, CAPACITY FULL SPEED 38/40/42 GPM @ 15" HG, 1750 RPM 10.4/11.0/12.7 BHP, 350 PSIG HEAD, MOTOR HP 15.
8	FUEL OIL TRANSFER PUMP (ROTARY)	1	$\triangle 1^{7}$ $\triangle 2^{10}$	4650 -20		8-10-76	22-500012D	810-1507-W	DE LAVAL TURBINE INC.	6-3-77			1734# DRY W/MOTOR	MODEL TKJ322BS-325, VERTICAL, IMO TYPE, WITH FLEXIBLE COUPLING, CAPACITY 225/105 GPM @ 13"/20" Hg, 870/435 RPM, 20.6/9 BHP, 100 PSIG HEAD, MOTOR HP 25.
9	LUBRICATING OIL SERVICE PUMP (ROTARY)	2	$\triangle 2^{11}$	4650 -20		8-10-76	22-500012D	810-1507-W	DE LAVAL TURBINE INC.	6-3-77			1605# DRY W/MOTOR	MODEL 3KTX-412, VERTICAL, IMO TYPE, WITH FLEXIBLE COUPLING, CAPACITY 445/459 GPM @ FLOODED CONDITION, 1765 RPM, 28.5/33.6 BHP, DISCHARGE PRESS. 80 PSIG, MOTOR HP 40.
10	EMERGENCY LUBRICATING OIL SERVICE (ROTARY)	1	$\triangle 2^{12}$	4650 -20		8-10-76	22-500012D	810-1507-W	DE LAVAL TURBINE INC.	6-3-77			1660# DRY W/MOTOR	MODEL 3KTX-412, VERTICAL, IMO TYPE, WITH FLEXIBLE COUPLING, CAPACITY 230/238 GPM @ FLOODED CONDITION, 900 RPM, 3.1/4.5 BHP DISCHARGE PRESS. 10 PSIG, MOTOR HP 5.
11	DIESEL OIL TRANSFER PUMP (ROTARY)	1	$\triangle 1^{7}$ $\triangle 2^{13}$	4650 -20		8-10-76	22-500012D	810-1507-W	DE LAVAL TURBINE INC.	6-3-77			351# DRY W/MOTOR	MODEL G3DBS218, HORIZONTAL, IMO TYPE, WITH FLEXIBLE COUPLING, CAPACITY 56/57 GPM @ 20" Hg, 1750 RPM, 2.6/2.7 BHP, 50 PSI HEAD
12	MACHINERY SPACE BILGE SUMP PUMP (RECIPROCATING)	1	$\triangle 1^{7}$	4650 -63		1-21-77	22-500012F	121-1520-X	WHEATLEY CO.	6-10-77			800#	3½" × 5⅞" HORIZONTAL DOUBLE-ACTING DUPLEX TYPE, V-BELT DRIVEN WITH MOTOR, CAPACITY 50 GPM, DISCHARGE PRESSURE 35 PSIG, SUCTION LIFT 5.2 PSI, 1.2 BHP
13	CARGO PUMP (ROTARY)	2	$\triangle 1^{7}$	4650 -14		3-13-77	22-500012B	315-1501-X	FOSTER PUMP WORKS INC.	9-9-77			4,200#	MODEL R2-4 HORIZONTAL, VANE TYPE, COMPLETE WITH RELIANCE "REEVES VARI-SPEED MOTORDRIVE" & ELEC. MOTOR, SPEED RANGE 360 TO 90 RPM, CAPACITY 180 TO 45 GPM, SUCTION LIFT 2.5 TO 7.4 PSI
14	LINE SHAFT BEARING LUBRICATING OIL PUMP (ROTARY)	1	$\triangle 1^{7}$	4650 -95		6-20-77	22-500012H	620-1506-X	FOSTER PUMP WORKS INC.	12-16-77			330#	MODEL RR2-00 HORIZONTAL, VANE TYPE, COMPLETE WITH RELIANCE MOTOR & SCOOP MOUNT SPEED REDUCER, CAPACITY 1.7 TO 2 GPM, DISCHARGE PRESS. 50 PSIG, PUMP RPM 160, SUCTION LIFT 2.5 PSI, 25 BHP
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ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	MOTOR DRIVEN PUMPS													
2	MAIN CIRCULATING PUMP	1		4650 -12		9-8-76	22-500012E	908-1500-W	WORTHINGTON CORP.	6-3-77			5,000#	MODEL 2GKV, VERTICAL PROPELLER TYPE UNIT, ARRANGED FOR DIRECT MOTOR DRIVE, CAPACITY 21,800 GPM @ 11.2 FT. HEAD, SALT WATER, 595 RPM, 106 BHP
3	SALT WATER SERVICE PUMP	1		4650 -17		9-8-76	22-500012	908-1503-W	WORTHINGTON CORP.	6-3-77			600#	MODEL GLRV-10B, VERTICAL, SINGLE STAGE, DOUBLE SUCTION CENTRIFUGAL UNIT ARRANGED FOR DIRECT MOTOR DRIVE, CAPACITY 1800 GPM @ 56 FT. HEAD, 1770 RPM, 34.1 BHP, FLEXIBLE COUPLING
4	TRIM TRANSFER PUMP	1		4650 -17		9-8-76	22-500012	908-1503-W	WORTHINGTON CORP.	6-3-77			524#	MODEL 5LR-10A, HORIZONTAL, SINGLE STAGE, DOUBLE SUCTION CENTRIFUGAL UNIT ARRANGED FOR DIRECT MOTOR DRIVE, CAPACITY 875 GPM, @ 45 FT. HEAD, 1770 RPM, 12.8 BHP, FLEXIBLE COUPLING.
5	CARGO OIL HOT WATER CIRCULATING PUMP	2		4650 -17		9-8-76	22-500012	908-1503-W	WORTHINGTON CORP.	6-3-77			292#	MODEL D-1021, CLOSE COUPLED, PUMP IMPELLER MOUNTED ON MOTOR SHAFT EXTENSION, CAPACITY 160 GPM @ 83 FT. HEAD, 3530 RPM, 4.3 BHP
6	DOMESTIC WATER PUMP	2		4650 -17		9-8-76	22-500012	908-1503-W	WORTHINGTON CORP.	6-3-77			280#	MODEL D-1021 CLOSE COUPLED, PUMP IMPELLER MOUNTED ON MOTOR SHAFT EXTENSION, CAPACITY 40 GPM @ 139 FT. HEAD, 3530 RPM, 3.1 BHP
7	ATMOSPHERIC DRAIN PUMP	2		4650 -17		9-8-77	22-500012	908-1503-W	WORTHINGTON CORP.	6-3-77			452#	MODEL D-1021, CLOSE COUPLED, PUMP IMPELLER MOUNTED ON MOTOR SHAFT EXTENSION, CAPACITY 20/5 GPM @ 243/244 FT. HEAD, 3530 RPM, 5.2 BHP
8	ICE WATER CIRCULATING PUMP	1		4650 -17		9-8-76	22-500012	908-1503-W	WORTHINGTON CORP.	6-3-77			70#	MODEL D-520, CLOSE COUPLED, PUMP IMPELLER MOUNTED ON MOTOR SHAFT EXTENSION, CAPACITY 25 GPM @ 6 FT. HEAD, 1175 RPM, .06 BHP
9	HOT WATER CIRCULATING PUMP	1		4650 -17		9-8-76	22-500012	908-1503-W	WORTHINGTON CORP.	6-3-77			70#	MODEL D-520, CLOSE COUPLED, PUMP IMPELLER MOUNTED ON MOTOR SHAFT EXTENSION, CAPACITY 25 GPM @ 6 FT. HEAD, 1175 RPM, .06 BHP
10	MAIN CONDENSATE PUMP (DEEPWELL)	2	$\triangle 1^{8}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			2,218#	MODEL 10M50-30-6, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 6 STAGE, CAPACITY 290/380 GPM @ 143/125 PSI HEAD, 1760 RPM, 32.2/35.6 BHP
11	FIRE & TANK WASHING PUMP (DEEPWELL)	1	$\triangle 1^{8}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			1,511#	MODEL 10H90-75-9, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 9 STAGE CAPACITY 1100/700/300 GPM @ 33/147/200 PSI HEAD, 1760 RPM, 65/77/62 BHP
12	FIRE PUMP (DEEPWELL)	1	$\triangle 1^{8}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			1,067#	MODEL 10M41-2, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 2 STAGE, CAPACITY 700 GPM @ 125 PSI HEAD, 3520 RPM 67 BHP
13	BILGE PUMP (DEEPWELL)	1	$\triangle 1^{8}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			765#	MODEL 12H-135-1, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 1 STAGE, CAPACITY 1050/1200 GPM @ 31/29 PSI HEAD, 1760 RPM, 25.1/26 BHP
14	SALT WATER SERVICE PUMP (DEEPWELL)	1	$\triangle 1^{8}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			765#	MODEL 12H-135-1, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 1 STAGE, CAPACITY 1050/1200 GPM @ 31/29 PSI HEAD, 1760 RPM, 25.1/26 BHP
15	BILGE, BALLAST & SALT WATER SERVICE PUMP (DEEPWELL)	1	$\triangle 1^{8}$	4650 -18		9-8-76	22-500012A	908-1502-W	WORTHINGTON CORP.	6-3-77			765#	MODEL 12H-135-1, VERTICAL, TURBINE TYPE, DRIVEN BY VERTICAL MOUNTED MOTOR, 1 STAGE, CAPACITY 1050/1200/1200 GPM @ 31/29/29 PSI HEAD, 1760 RPM 25.1/26/26 BHP

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ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	STEAM CONTROL VALVES													
2	STEAM PRESSURE REDUCING VALVE	1	$\triangle 1^{9}$	4650 -50		3-9-77	22-450020	309-1515-X	LESLIE CO.	9-16-77			160#	FOR 150 PSIG STEAM SYSTEM, INLET PRESS. MAX. 1000 PSIG, TEMP. MAX. 555° F, OUTLET PRESS. 150 PSIG, CAPACITY 5100#/hr., SIZE & CLASS 2" DDOSX
3	STEAM PRESSURE REDUCING VALVE	1	$\triangle 1^{9}$	4650 -50		3-9-77	22-450020	309-1515-X	LESLIE CO.	9-16-77			167#	FOR STEAM TO DIST. PLANT, INLET PRESS. MAX. 50 PSIG, TEMP. MAX. 450° F, OUTLET PRESS. 5 PSIG, CAPACITY 6000#/hr, SIZE & CLASS 2½" DL-3
4	STEAM CONTROL VALVE	1	$\triangle 1^{9}$	4650 -50		3-9-77	22-450020	309-1515-X	LESLIE CO.	9-16-77			153#	FOR CROSSOVER EXTRACTION, INLET PRESS. MAX. 81 PSIG, TEMP. MAX. 460° F, OUTLET PRESS. 39 PSIG, CAPACITY 6190#/hr, SIZE & CLASS 2½" DDLS-1
5	AUX. EXHAUST BACK PRESSURE VALVE	1	$\triangle 1^{9}$	4650 -50		3-9-77	22-450020	309-1515-X	LESLIE CO.	9-16-77			507#	AUX. STEAM DUMP CONTROL VALVE, INLET PRESS. MAX. 55 PSIG, TEMP. MAX. 450° F, OUTLET PRESS ΔP52 PSIG, CAPACITY 28000#/hr, NORM, SIZE & CLASS 6" DDLS-1
6	STEAM PRESSURE REDUCING VALVE	1	$\triangle 1^{9}$ $\triangle 2^{14}$	4650 -50		3-9-77	22-450020	309-1515-X	LESLIE CO.	9-16-77			198#	DESUPERHEATED STEAM MAKEUP CONTROL VALVE, INLET PRESS. MAX. 1025, TEMP MAX. 565° F, OUTLET PRESS. 48 PSIG, CAPACITY 28,000#/hr., NORM, SIZE & CLASS 2½" DDBS-3X
7	STEAM CONTROL VALVE	2	$\triangle 1^{9}$ $\triangle 2^{15}$	4650 -46		8-1-77	22-450016C	801-1533-X	LESLIE CO.	1-20-78			505#	SUPERHEATER OUTLET TEMPERATURE CONTROL VALVE, INLET PRESS. MAX. 1060 PSIG, TEMP. MAX. 955° F, CAPACITY 40,000#/hr, SIZE & CLASS 4" DOSX.
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FRAME 5 OF 24

BUILDERS PLAN NO. M4650-111-5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

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Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

FRAME 6 OF 24

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ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	MISCELLANEOUS REGULATING & CONTROL VALVES													
2	SALT WATER REDUCING VALVE	1	$\triangle 1^{9}$	4650 -51		4-21-77	22-500018	421-1531-X	LESLIE CO.	9-16-77			235#	FIREMAIN 125/35 REDUCING VALVE, INLET PRESS. MAX. 125 PSIG, TEMP MAX. 85°F, OUTLET PRESS. 35 PSIG, CAPACITY 800 GPM, SIZE & CLASS 4" WWBN
3	PRESSURE REDUCING VALVE	1	$\triangle 1^{9}$	4650 -51		4-21-77	22-500018	421-1531-X	LESLIE CO.	9-16-77			26#	PNEUMATIC VALVES REDUCING VALVE, INLET PRESS. MAX. 150 PSIG, TEMP. MAX 150°F, OUTLET PRESS. 110 PSIG, CAPACITY 250 SCFM (AIR), SIZE & CLASS 3/4" LA-5
4	PRESSURE REDUCING VALVE	1	$\triangle 1^{9}$	4650 -51		4-21-77	22-500018	421-1531-X	LESLIE CO.	9-16-77			47#	D.O. PRESSURE REDUCING VALVE, INLET PRESS. MAX. 55 PSIG, TEMP MAX. 50°F, OUTLET PRESS. 20 PSIG, CAPACITY 20 GPM, SIZE & CLASS 1" WWLBN
5	RECIRCULATION VALVE	1	$\triangle 1^{9}$ $\triangle 2^{16}$	4650 -51		4-21-77	22-500018	421-1531-X	LESLIE CO.	9-16-77			300#	PORT FEED PUMP RECIRCULATION VALVE, INLET PRESS. MAX. 1100 PSIG, TEMP. MAX. 284°F, OUTLET PRESS. 10 PSIG, CAPACITY 83 GPM, SIZE & CLASS 1½" DOUS
6	PRESSURE CONTROL VALVE	1	$\triangle 1^{9}$ $\triangle 2^{17}$	4650 -51		4-21-77	22-500018	421-1531-X	LESLIE CO.	9-16-77			148#	LUBE OIL OVER PRESSURE CONTROL VALVE, INLET PRESS. MAX. 110 PSIG, TEMP. MAX. 130°F, OUTLET PRESS. 10 PSIG, CAPACITY 201 GPM, SIZE & CLASS 2½" DDLS
7	AIR REDUCING VALVE	1	$\triangle 1^{9}$	4650 -51		4-21-77	22-500018	421-1531-X	LESLIE CO.	9-16-77			26#	150/85 AIR REDUCING VALVE, INLET PRESS. MAX. 150 PSIG, TEMP. MAX. 85°F, OUTLET PRESS. 85 PSIG, CAPACITY 50 SCFM (AIR), SIZE & CLASS ½" LA-5
8	LUBRICATING OIL TEMPERATURE CONTROL VALVE	1	$\triangle 1^{9}$	4650 -43		7-29-77	22-500016A	729-1534-X	ROBERTSHAW CONTROLS CO.	2-17-78			217#	BALANCED SLEEVE, THREE-WAY, MODULATING TYPE, SHALL MIX LUBE OIL LEAVING THE LUBE OIL COOLER W/OIL DISCHARGED DIRECTLY FROM THE MAIN LUBE OIL SERVICE PUMP, TYPE WD, SIZE 4", CAPACITY 400 GPM
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HULL 4650 & 51

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				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	TEMPERATURE REGULATORS													
2	FUEL OIL HEATER	1	$\triangle 1^{9}$ $\triangle 2^{18}$	4650 -35		3-10-77	22-500016	310-1527-X	LESLIE CO.	9-16-77			70#	SIZE & CLASS 1" DDOS, INLET STM. PRESS. 150 PSIG, INLET TEMP. 456°F, STM. CAPACITY 954#/hr, HEATED LIQUID TEMP. RANGE 170°-270°F, LIQUID PRESS. 365 PSIG, OUTLET PRESS. 50 PSIG
3	TANK CLEANING HEATER	1	$\triangle 1^{9}$ $\triangle 2^{18}$	4650 -35		3-10-77	22-500016	310-1527-X	LESLIE CO.	9-16-77			185#	SIZE & CLASS 2" DDOSX, INLET STM. PRESS. 850 PSIG, INLET TEMP. 555°F, STM. CAPACITY 19,000#/hr, HEATED LIQUID TEMP. RANGE 120°-220°F, LIQUID PRESS. 140 PSIG, OUTLET PRESS. 125 PSIG.
4	POTABLE WATER HEATER	1	$\triangle 1^{9}$ $\triangle 2^{19}$	4650 -35		3-10-77	22-500016	310-1527-X	LESLIE CO.	9-16-77			60#	SIZE & CLASS 1" GTS INLET STM. PRESS. 38 PSIG, INLET TEMP. 284°F, STM. CAPACITY 696#/hr, HEATED LIQUID TEMP. RANGE 120°-220°F, LIQUID PRESS. 60 PSIG
5	CARGO COIL HOT WATER SUPPLY HEATER	1	$\triangle 1^{9}$	4650 -35		3-10-77	22-500016	310-1527-X	LESLIE CO.	9-16-77			83#	SIZE & CLASS 1½" GTB-4, INLET STM. PRESS. 38 PSIG, INLET TEMP. 284°F, STM. CAPACITY 1733#/hr, HEATED LIQUID TEMP. RANGE 120°-220°F, LIQUID PRESS. 50 PSIG.
6	FUEL OIL SERVICE TANK	4	$\triangle 1^{9}$	4650 -35		3-10-77	22-500016	310-1527-X	LESLIE CO.	9-16-77			83#	SIZE & CLASS 1½" GTB-4, INLET STM. PRESS. 38 PSIG, INLET TEMP. 284°F, STM. CAPACITY 1110#/hr, HEATED LIQUID TEMP RANGE 120°-220°F
7	CARGO OIL TANK HEATER	9	$\triangle 1^{9}$ $\triangle 2^{20}$	4650 -35		3-10-77	22-500016	310-1527-X	LESLIE CO.	9-16-77			69# 1" 85# 1½"	SIZE & CLASS 1" DDL-3 INLET STM. PRESS 13 PSIG, INLET TEMP. 160°F, HOT WATER CAPACITY 17.5 GPM, HEATED LIQUID TEMP. RANGE 50° TO 250°F SIZE & CLASS 1½" DDL-3 IS ALSO REQUIRED
8	UNIT HEATER	1	$\triangle 1^{9}$	4650 -34		4-1-77	22-500016B	401-1520-X	ROBERTSHAWS CONTROLS CO.	1-20-78			15#	1" RT-208 TEMPERATURE REGULATOR VALVE FOR STEERING GEAR RM., OPERATING PRESS. 35 PSIG, STEAM FLOW 77#/hr, SET POINT 40°F
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11	PNEUMATIC CONTROL SYSTEMS	1		4650 -84		8-9-76	22-500028B	809-1507-W	HONEYWELL, INC.	7-2-77				CONTROL SYSTEMS FOR VENTILATION, AIR CONDITIONING, & DEHUMIDIFICATION SYSTEMS INCLUDE REDUCING STATIONS, AIR CLEANERS, PANEL BOARD, GAGE BOARDS, VALVES, CONTROL EQUIPMENT, THERMOSTATS, THERMOMETERS, GAGES, LABEL PLATES, DAMPERS, DAMPER MOTORS, LINKAGE, SWITCHES & RELAYS. SYSTEMS ARE FULLY AUTOMATIC, CAPABLE OF SATISFYING SIMULTANEOUS, COOLING & HEATING REQUIREMENTS OF SPACES.
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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	DRAIN REGULATORS & LEVEL CONTROLLERS													
2	DRAIN REGULATOR	1	$\triangle 1^{9}$	4650 -36		3-29-77	22-500017	329-1517-X	LESLIE CO.	9-16-77			69#	SIZE 1", CLASS DL-3, FOR CARGO TANK CLEANING HEATER DRAIN COOLER, INLET PRESS. 125 PSIG, INLET TEMP. 160°F, OUTLET PRESS. 0PSIG, CAPACITY WATER FLOW 39 GPM
3	DRAIN REGULATOR	1	$\triangle 1^{9}$	4650 -36		3-29-77	22-500017	329-1517-X	LESLIE CO.	9-16-77			42#	SIZE 1¼", CLASS DDL-3, FOR 1ST STG. FEED HEATER DRAIN COOLER, GLAND LEAKOFF & VENT CONDENSER, INLET PRESS. 0PSIG, INLET TEMP. 100°F, OUTLET PRESS. 2.1 PSIA, CAPACITY WATER FLOW 31 GPM
4	DRAIN REGULATOR	1	$\triangle 1^{9}$	4650 -36		3-29-77	22-500017	329-1517-X	LESLIE CO.	9-16-77			69#	SIZE 1", CLASS DL-3, FOR CONDENSATE RECIRCULATION TO THE MAIN CONDENSER, INLET PRESS. 63 PSIG, INLET TEMP. 110°F, OULET PRESS. 0 PSIG, CAPACITY WATER FLOW 60 GPM
5	DRAIN REGULATOR	1	$\triangle 1^{9}$	4650 -36		3-29-77	22-500017	329-1517-X	LESLIE CO.	9-16-77			80#	SIZE 1", CLASS DOS, FOR 4TH STAGE HEATER DRAIN TO 3RD STAGE HEATER, INLET PRESS. 351 PSIG, INLET TEMP. 396°F, OUTLET PRESS. 158 PSIG, CAPACITY WATER FLOW 27 GPM
6	DRAIN REGULATOR	1	$\triangle 1^{9}$	4650 -36		3-29-77	22-500017	329-1517-X	LESLIE CO.	9-16-77			69#	SIZE 1", CLASS DL-3, FOR 3RD STAGE HEATER DRAIN, INLET PRESS. 158 PSIG, INLET TEMP. 326°F, OUTLET PRESS. 66 PSIG, CAPACITY WATER FLOW 58 GPM
7	DRAIN REGULATOR	1	$\triangle 1^{9}$	4650 -36		3-29-77	22-500017	329-1517-X	LESLIE CO.	9-16-77			75#	SIZE 1", CLASS DDL-3, FOR ATMOSPHERIC DRAIN TANK LEVEL CONTROL, INLET PRESS. 100 PSIG, INLET TEMP. 212°F, OUTLET PRESS. 50 PSIG, CAPACITY WATER FLOW 5 TO 20 GPM
8	DRAIN REGULATOR	1	$\triangle 1^{9}$	4650 -36		3-29-77	22-500017	329-1517-X	LESLIE CO.	9-16-77			18#	SIZE ½", CLASS BAT-1, FOR AIRLOCK FOR FEED WATER MAKE-UP, INLET PRESS. 3 PSIG.
9	DRAIN REGULATOR	1	$\triangle 1^{9}$ $\triangle 2^{21}$	4650 -36		3-29-77	22-500017	329-1517-X	LESLIE CO.	9-16-77			480#	SIZE 4", CLASS DLS-1, FOR CONDENSATE LEVEL CONTROL, INLET PRESS. 80PSIG, INLET TEMP. 185°F, OUTLET PRESS. 76 PSIG, CAPACITY WATER FLOW 380GPM
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11	STRAINERS													
12	LUBRICATING OIL SERVICE PUMP SUCTION	1		4650 -39		10-27-76	22-500022	1027-1507-W	TATE ENGINEERING CO.	6-3-77			1040#	6" DUPLEX TYPE, 400 GPM, VISCOCITY 500 SSU, VISCOCITY RANGE 120-500 SSU, WORKING PRESS. 100 PSIG, PRESS. STD. 150# ANSI, BASKET 80 MESH, CLEAN PRESS. DROP 1.5 PSI
13	FUEL OIL SERVICE PUMP SUCTION	1		4650 -39		10-27-76	22-500022	1027-1507-W	TATE ENGINEERING CO.	6-3-77			745#	5" DUPLEX TYPE, 35 GPM, VISCOCITY 1000 SSU, VISCOCITY RANGE 150-7000 SSU, WORKING PRESS. 25 PSIG, PRESS. STANDARD 150# ANSI, BASKET 20 MESH CLEAN PRESS DROP 1.0 PSI
14	FUEL OIL TRANSFER PUMP SUCTION	1		4650 -39		10-27-76	22-500022	1027-1507-W	TATE ENGINEERING CO.	6-3-77			1040#	6" DUPLEX TYPE, 225 GPM, VISCOCITY 5000 SSU, VISCOCITY RANGE 150-7000 SSU, WORKING PRESS. 25 PSIG, PRESS. STANDARD 150# ANSI, BASKET ⅛" PEPF. PLATE, CLEAN PRESS. DROP 1.0 PSI
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ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	METERS, GAUGES & ALARMS													
2	SALINITY INDICATING EQUIPMENT	2		4650 -44		3-21-77	22-500039	321-1517-X	MC NAB, INC.	9-2-77			198#	MODEL MDM-ATC-10-(5)-(N) SALINITY INDICATOR PANEL READING DIRECTLY IN GRAINS OF SALT PER GALLON OF WATER, FIVE MC-1 CONDUCTIVITY CELLS, FIVE L-1 SAFTY VALVES, ONE AUDIBLE ALARM BELL
3	BILGE OIL DETECTOR	1		4650 -45		5-16-77	22-500076A	516-1522-X	BULL & ROBERTS INC.	9-23-77				AQUALERT MODEL 240 SYSTEM, WILL CONTINUOUSLY MEASURE & INDICATE OIL CONTAMINATION IN THE OVERBOARD DISCHARGE, INCLUDES AN OIL CONTAMINATION ALARM WITH ADJUSTABLE SET POINT
4	ULTRA-VIOLET OIL DETECTION & CONTROL SYSTEM	1		4650 -38		9-21-76	22-500076	921-1507-W	BULL & ROBERTS INC.	3-22-77				AQUALERT MODEL 240 SYSTEM, WILL CONTINUOUSLY MEASURE & INDICATE OIL CONTAMINATION IN THE CONDENSATE RETURNS, INCLUDES AN OIL CONTAMINATION ALARM WITH ADJUSTABLE SET POINT
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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

FRAME 7 OF 24

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(Old QD 85)

HULL 4650 ¢ 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	HULL CASTINGS ¢ FORGINGS													
2	STERN TUBE BEARINGS ¢ SEALS	1		4650 -40		9-23-76	22-502476	923-1502-W	WAUKESHA BEARING	10-7-77			24,650#	ONE STERN TUBE AFTER BEARING, ONE STERN TUBE FORWARD BEARING, ONE AFTER SEAL NO. 800, ONE FORWARD SEAL NO. 800, OVERALL BEARING LENGTH 74", ACCOMODATE 29⅞" DIA. STEEL SHAFT
3	PROPELLER NUT	1	$\triangle 1^{9}$	4650 -75		10-4-76	22-502700B	1004-1506-W	WALZ ¢ KRENZER	7-1-77			1,800#	PILGRIM TYPE, PROVIDING A HYDRAULIC MEANS OF INSTALLING ¢ REMOVING THE PROPELLER, "O" RING SEAL BETWEEN THE PROPELLER HUB ¢ THE FOWARD FACE OF THE NUT
4	PROPELLER	1		4650 -76		11-24-76	22-502736	1124-1510-W	FERGUSON PROPELLER ¢ RBCONDITIONING, LTD.	10-23-77			76,930#	RIGHT HANDED, SOLID TYPE, 23'-6" WITH 6 BLADES, CAST FROM NICKLE ALUMINUM BRONZE, ABS TYPE 4 VIRGIN METAL INGOTS.
5	LINE SHAFT BEARINGS	3		4650 -76		10-4-76	22-502676	1004-1512-W	AMERICAN METAL BEARING CO.	10-7-77			10,500#	BABBITTED, SELF-ALIGNING, DISC LUBRICATED TYPE, EACH WITH REMOVABLE LOWER HALF SHELL, SHAFT JOURNALS IN WAY OF THE BEARINGS WILL BE 22⅞" DIA., BEARING HOUSINGS ¢ SHELLS CAST STEEL
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HULL 4650 ¢ 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	DECK MACHINERY													
2	STEERING GEAR	1	✓$\triangle 1^{9}$	4650 -24		9-29-76	22-500025	929-1507-W	LIDGERWOOD MFG. CO.	8-12-77			28,000#	TWO CYLINDER ELECTRIC HYDRAULIC TYPE WITH A SINGLE RAM 13¼" DIA., DRIVING THE 36" RADIUS SPLIT CROSSHEAD THROUGH RAPSON SLIDES, MAX RUDDER TORQUE 12,000,000 POUND INCHES
3	ANCHOR WINDLASS	2	$\triangle 1^{9}$	4650 -25		9-28-76	22-500025A	928-1509-W	SKAGIT CORP.	10-7-77			29,734#	DUAL, VERTICAL SHAFT, HYDRAULIC TYPE, WILDCATS MOUNTED ON LOW SPEED VERTICAL SHAFT ¢ WARPING HEADS ON INTERMEDIATE SHAFT, CAPABLE OF EXERTING A LINE PULL OF 20,000#@ 35 FPM
4	CONSTANT TENSION MOORING WINCHES	6	$\triangle 1^{9}$	4650 -26		12-3-76	22-500025E	1203-1503-W	LAKE SHORE, INC.	10-19-77			10,695#	FOUR WITH GYPSIE HEADS ¢ TWO WITHOUT, SHALL AUTOMATICALLY MAINTAIN A CONSTANT LINE PULL BETWEEN 10,000# ¢ 30,000#, AUTOMATIC OR MANUAL CONTROL, MOTOR DRIVEN
5	BOOM (30 TON SYSTEM)	1		4650 -62		9-28-76	22-500025H	928-1514-W	SKAGIT CORP.	1-6-78				ONE (1) 30 TON CAPACITY CARGO BOOM HAVING TOPPING ¢ SLEWING FALLS, ONE (1) TOPPING DIVIDED DRUM ELEC. MOTOR WINCH, ONE (1) CARGO HOIST DIVIDED DRUM ELEC. MOTOR WINCH, ONE (1) SLEWING ELEC. MOTOR WINCH
6	BOOM (70 TON SYSTEM)	1		4650 -52		9-28-76	22-500025G	928-1510-W	SKAGIT CORP.	12-19-77				ONE (1) 70 TON CAPACITY CARGO BOOM HAVING TWO TOPPING LIFTS LEADING FROM THE BOOM HEAD TO THE KING POSTS, TWO (2) TOPPING WINCHES SINGLE DRUM ELEC. MOTOR DRIVEN, ONE (1) CARGO HOIST WINCH
7	CAPSTAN	1.	$\triangle 1^{9}$	4650 -65		2-14-77	22-500025B	214-1500-X	LAKE SHORE, INC.	12-9-77			7,550#	VERTICAL HEAD SMOOTH BARREL TYPE, 2 SPEED, REVERSIBLE, RATED TO PULL 60,000# @ A LINE SPEED OF 35 FT/MIN. ¢ A LIGHT LINE SPEED OF 140 FT/MIN., ELEC. MOTOR MOUNTED BELOW DECK
8	ACCOMODATION LADDER WINCHES	2		4650 -88		12-3-76	22-500025F	1203-1504-W	LAKE SHORE, INC.	10-2-77				REVERSIBLE ELECTRIC DRIVEN BY A 7½/3.75 H.P. MOTOR, CONTROL STATIONS LOCATED ON MAIN DECK ADJACENT TO EACH LADDER, WILL STOW THE LADDER IN 3 MINS., RATING OF 3000# @ 35 FPM
9	HATCH COVER WINCHES	10		4650 -91		11-9-76	22-500025R	1109-1510-W	NEW ENGLAND TRAWLER EQUIP. CO.	12-23-77				FIVE RIGHT HAND ¢ FIVE LEFT HAND HATCH COVER HANDLING WINCHES WITH WIRE DRUM ARRANGED FOR ELEC. MOTOR DRIVE, TO OPERATE THE 2ND ¢ 3RD DECK HATCHES IN NO. 9 HOLD, LINE PULL OF 5000# @ 60 FPM
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BUILDERS PLAN NO. M4650-111-5

AUTOMATION INDUSTRIES, INC.
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1	REFRIGERATION													
2	SHIPS SERVICE REFRIGERATION PLANT	1	△9	4650 -29		6-24-76	22-500026	624-1513-W	YORK DIVISION BORG WARNER CORP.	7-1-77			2,530#	PLANT CONSISTS OF TWO IDENTICAL PACKAGED R-12 CONDENSING UNITS, UNIT COOLERS, ELECTRIC DEFROST, SCUTTLE BUTTS, FRESH WATER COOLERS, CONTROLS & ACCESSORIES
3	CARGO REFRIGERATION PLANT	1	△9	4650 -86		6-24-76	22-500026A	624-1514-W	YORK DIVISION BORG WARNER CORP.	6-24-77			17,190#	FOUR (4) DUAL PACKAGE UNITS, R-12 REFRIGERANT, LIQUID OVERFEED TYPE COMPLETE WITH COMPRESSORS, CONDENSERS, ACCUMULATORS, PUMPS, OIL SEPARATORS, EVAPORATOR COILS WITH ELECTRIC DEFROST, CONTROLS FOR AUTOMATIC & REMOTE CONTROL, REMOTE MONITORING, MAINTAINS REFRIGERATED CARGO AT -10°F & +45°F IN CARGO HOLDS 5, 5A, 5B, 5C, 6 & 7
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7	DEHUMIDIFICATION													
8	CARGO DEHUMIDIFICATION PLANT	1		4650 -92		7-20-76	22-500047	720-1510-W	CARGOCAIRE ENGINEERING CORP.	7-1-77			2400#	COMPLETE WITH DEHUMIDIFIER, DRY AIR & WET AIR FANS, FAN MOTORS, STEAM HEATER, SEA WATER AFTER COOLING COIL, AIR FILTERS, SENSING ELEMENTS, PNEUMATIC OPERATED AIR CIRCULATING DAMPERS, CONTROLS, RECORDING CONSOLE & APPARATUS PANEL BOARD. DRY DESICCANT TYPE MOISTURE REMOVAL, MOISTURE 230 LBS/hr, VOLUME OF DRY AIR 4000 CFM, DRY AIR USED FOR UNITIZED CARGO HOLD NO. 9 ONLY
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11	AIR CONDITIONING													
12	AIR CONDITIONING HIGH SIDE	2	△9	4650 -30		6-24-76	22-500028	624-1512-W	YORK DIVISION BORG-WARNER	7-1-77			6,130#	REFRIGERANT-12 DIRECT EXPANSION TYPE, INCLUDES COMPRESSOR, CONDENSER, RECEIVER, PIPING & NECESSARY AUXILIARIES, DESIGNED FOR COMPLETE AUTO. OPERATION FROM ENGINE ROOM CONSOLE
13	AIR MIXING UNITS	78	△9	4650 -28		6-24-76	22-500028C	624-1512-W	ARONCA, INC.	7-1-77			63#	SIZES 4 MH, 5MH, 6MH & 7MH, HOT & COLD AIR PROPORTIONING VALVE ACTUATED BY A ROOM THERMOSTAT CONTROLLED PNEUMATIC MOTOR & A CONSTANT VOLUME REGULATOR TO CONTROL THE AIR
14	CENTRAL STATION UNIT	2	△9	4650 -83		8-17-76	22-500028A	817-1510-W	NUCLEAR COOLING, INC.	7-22-77			6,300#	COMPLETELY ASSEMBLED & INCLUDES A STEAM PREHEATER, STEAM REHEATER, DIRECT EXPANSION COOLING COIL, DRAIN PAN, CENTRIFUGAL FAN, MOTOR, BELT DRIVE, (4) 9" D. COLD & 7" D. HOT OUTLETS
15	CONSOLE AIR CONDITIONER	1	△11	4650 -101		12-28-77	22-500026B	1228-1506-X	AIRFLOW CO.	3-17-78			1,100#	REFRIGERANT 12 DIRECT EXPANSION TYPE, SELF CONTAINED, FOR COOLING MACHINERY SPACE CONSOLES, COOLING CAPACITY 58,000 BTU/HR., AIR CAPACITY 900 CFM, EXTERNAL S.P. 1"

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1	VENTILATION													
2	VANEAXIAL FAN	2		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	4-29-77			1750#	SIZE MA54-C5, EXHAUST, MACHY. SPACE 55,000 CFM, 1.2" STATIC PRESSURE, DIRECT DRIVE, 1150 RPM, 25 H.P.
3	VANEAXIAL FAN	3		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			1900#	SIZE MA54-C9, SUPPLY, MACHY. SPACE, 55,000 CFM, 2.0" STATIC PRESSURE, DIRECT DRIVE, 2 SPEED, 1150/575 RPM, 35 HP
4	VANEAXIAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			750#	SIZE 200 AF, EXHAUST, WINDLASS MACHY. SPACE, M.G. RM, BOSUNS STORES, MAIN & 2ND DK, & PAINT LKR, 19,430 CFM, 2.1" STATIC PRESS, DIRECT DRIVE, 1750 RPM, 10. HP
5	PROPELLER FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			80#	SIZE 14PF, EXHAUST, DK. LKR. (MAIN DK. AFT), 1500 CFM, .44" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, ¾ HP
6	PROPELLER FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			180#	SIZE 24PF, EXHAUST, M.G. RM. (MAIN DK. AFT) 4670 CFM .42" STATIC PRESSURE, DIRECT DRIVE, 1150 RPM, ¾ H.P.
7	VANEAXIAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			220#	SIZE 40 AF, EXHAUST, CARGO OIL PUMP RM. (AFT) & SHAFT ALLEY, 3425 CFM, 2.4" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, 2 H.P.
8	VANEAXIAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			450#	SIZE 100 AF, EXHAUST, BOW THRUSTER MACHY. SPACE, 9460 CFM, 2.57" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, 5 H.P.
9	VANEAXIAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			220#	SIZE 40 AF, EXHAUST, CARGO OIL PUMP RM. (FWD.), 4335 CFM, 1.9" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, 2 H.P.
10	VANEAXIAL FAN	24		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			765#	SIZE MA38A9, REFRIGERATED CARGO HOLDS 5, 5A, 5B, 5C, 6 & 7 RECIRCULATION, 23,520 CFM, 2.1 STATIC PRESSURE, DIRECT DRIVE, 2 SPEED, 1750/875 RPM, 20 H.P.
11	PROPELLER FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			80#	SIZE 14 PF WHEEL HOUSE EXHAUST, 1580 CFM, .39" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, ⅓ H.P.
12	VANEAXIAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			840#	SIZE MA38C7, MACHY. SPACE REFRIG. FLAT SUPPLY, 20,000 CFM, 2.0" STATIC PRESSURE, DIRECT DRIVE, 2 SPEED, 1150/575 RPM, 10 H.P.
13	CENTRIFUGAL FAN	2		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			60#	SIZE 2½ CF, BATTERY LKR. (RADIO RM)(TELEGRAPH), BATTERY LKR. (I.C. GEN. ALARM)(2 BATTERY CHARGES), EXHAUST, 150 CFM, .64" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, 1/20 H.P.
14	CENTRIFUGAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			700#	SIZE 100 CF, FAN RM, EMERG. GEN RM., LAUNDRIES, GALLEY, SCULLERY, CLEAN LINEN RM. GARBAGE RM, STWDS. SPEC. STORES SUPPLY, 9095 CFM, 2.45" S.P., DIRECT DRIVE, 1150 RPM, 5 H.P.
15	CENTRIFUGAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			700#	SIZE 100 CF, PANTRY & BAR AREA, GALLEY, SCULLERY, GARBAGE RM., SOILED LINEN, DK. TOILET, F.O. FILLING(S) EXHAUST, 9510 CFM, 2.25" STATIC PRESSURE, DIRECT DRIVE, 1150 RPM, 5 H.P.

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1	VENTILATION													
2	CENTRIFUGAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			570#	SIZE 60 CF, CREW, OFFICER & PASSENGER T&S, BONDED STORES, CLEANING GEAR LKRS., F.O. FILLING (P) EXHAUST, 5790 CFM, 2.8" STATIC PRESSURE, DIRECT DRIVE, 1150 RPM, 3 H.P.
3	CENTRIFUGAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			820#	SIZE MASSA0BL, UNITIZED CARGO HOLD NO. 9 RECIRC, 9990 CFM, 3.5" STATIC PRESSURE, BELT DRIVE, 1350 RPM, 10 H.P.
4	CENTRIFUGAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			84#	SIZE 7½ CF, FORK LIFT TRUCK STOWAGE (P) EXHAUST, 700 CFM, 1.36" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, ½ H.P.
5	CENTRIFUGAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			290#	SIZE 30 CF, STEERING GEAR RM. SUPPLY, 3260 CFM, 1.4" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, 1½ H.P.
6	CENTRIFUGAL FAN	1		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			140#	SIZE 10 CF, FORK LIFT TRUCK STOWAGE (S) EXHAUST, 1125 CFM, 1.4" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, ½ H.P.
7	CENTRIFUGAL FAN	2		4650 -31		7-23-76	22-500027	723-1500-W	BUFFALO FORGE CO.	7-22-77			290#	SIZE 30 CF, WINCH MOTOR COOLING (FWD & AFT) SUPPLY, 1700 CFM, 3.06" STATIC PRESSURE, DIRECT DRIVE, 1750 RPM, 1½ H.P.
8	GLAND LEAKOFF EXHAUSTER FAN	1		4650 -41		10-11-76	22-500027C	1011-1531-W	ZURN INDUSTRIES, INC. (CLARIDGE FAN CO.)	6-3-77			170#	CENTRIFUGAL SIZE 1309A TYPE O ARRGT. #4, ELEC MOTOR DRIVEN, CLOSE COUPLED, CAPACITY 250 CFM OF 100° F FREE AIR AT 15" WATER TOTAL HEAD, 3480 RPM, 1.1 BHP
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1	VENTILATION													
2	UNIT HEATER (STEAM)	1	✓△1 9	4650 -32		4-14-77	22-500029C	414-1517-X	DUNHAM BUSH, INC.	10-28-77			67#	ENTERING AIR TEMPERATURE 40° F, MINIMUM CAPACITY 71,495 BTU/HR, CONDENSATE 77#/HR, STEAM PRESSURE 30 PSI
3	DUCT PREHEATER (STEAM)	1	△1 9	4650 -83		8-17-76	22-500028A	817-1510-W	NUCLEAR COOLING, INC.	7-22-77			151#	FAN RM, EMERG. GEN. RM, LAUNDRIES, GALLERY, SCULLERY, STW'S. SPECIAL LKR, CAPACITY 9695 CFM, DESIGN TEMP. 0° F INLET, 70° F OUTLET, DESIGN OUTPUT 687,582 BTU/HR, STEAM 20 PSIG
4	DUCT REHEATER (ELECTRIC)	1	△1 9	4650 -549		1-11-77	23-500027F	111-1524-X	EMERSON ELECTRIC CO.	8-12-77			48#	STEWARDS SPECIAL LKR., FLANGED TYPE, 3500 WATTS, 240 VOLTS, SINGLE PHASE, AC, BUILT-IN CONTROL & BACKUP CONTACTORS, THERMOSTAT RANGE 20°-120° F.
5	DUCT PREHEATER (ELECTRIC)	2	△1 9	4650 -549		1-11-77	23-500027F	111-1524-X	EMERSON ELECTRIC CO.	8-12-77			80#	WHEELHOUSE, FLANGED TYPE, 13,300 WATTS FOR TWO STAGE OPERATION ON 240 VOLTS, THREE PHASE, AC, BUILT-IN CONTROL & BACKUP CONTACTORS, THERMOSTAT RANGE 20°-120° F
6	DUCT PREHEATER (ELECTRIC)	2	△1 9	4650 -549		1-11-77	23-500027F	111-1524-X	EMERSON ELECTRIC CO.	8-12-77			185#	QUARTERS EMERGENCY HEATING, FLANGED TYPE, 46 KW FOR OPERATION ON 440 VOLT, THREE PHASE, AC, THREE STAGE CONTROL & BACKUP CONTACTORS, ELECTRONIC STEPPING TYPE CONTROLLER.
7	DUCT PREHEATER (ELECTRIC)	1	△1 9	4650 -549		1-11-77	23-500027F	111-1524-X	EMERSON ELECTRIC CO.	8-12-77			366#	FAN RM, EMERG. GEN. RM, LAUNDRY, GALLEY ETC., FLANGED TYPE, 143 KW FOR OPERATION ON 440 VOLT, THREE PHASE, AC, FOUR STAGE CONTROL & BACKUP CONTACTORS, ELECTRONIC STEPPING TYPE CONTROLLER
8	UNIT HEATER (ELECTRIC)	2	△1 9	4650 -549		1-11-77	23-500027F	111-1524-X	EMERSON ELECTRIC CO.	8-12-77			21#	ELECTRIC WORKSHOP & STOREROOM, & ENGINEERS WORKSHOP, 5 KW FOR OPERATION ON 220 VOLT, THREE PHASE, AC, THERMOSTAT RANGE 40°-80° F.
9	UNIT HEATER (ELECTRIC)	1	△1 9	4650 -549		1-11-77	23-500027F	111-1524-X	EMERSON ELECTRIC CO.	8-12-77			37#	BOW THRUSTER MACHINERY ROOM, 10 KW FOR OPERATION ON 440 VOLT, THREE PHASE, AC, THERMOSTAT RANGE 20°-90° F
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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

FRAME 11 OF 24

41609 (Rev.A 4-69)
(Old QD485)

HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	ELECTRICAL EQUIPMENT													
2	2500 KW TURBINE GENERATOR SET	1		4650 -27		7-28-76	22-500053	728-1505-W	GENERAL ELECTRIC CO	6-24-77				HORIZONTAL, MULTI-STAGE, AXIAL FLOW, IMPULSE TYPE, 2500 KW CONTINUOUS, 450 VOLT, 3 PHASE, 60 HERTZ, INLET STEAM PRESSURE 850 PSIG, INLET STEAM TEMP. 950° F
3	2500 KW SHIPS SERVICE DIESEL GENERATOR SET	1	$\triangle 1^{9}$	4650 -55		7-28-76	22-50053A	728-1528-W	GENERAL ELECTRIC CO	6-10-77			78,700#	MODEL 7FDS16A1, SIXTEEN CYLINDER, FOUR CYCLE TURBO-CHARGED, AFTER COOLED DIESEL ENGINE RIGIDLY COUPLED TO A 2500 KW GENERAL ELEC. AC, SINGLE BEARING BRUSHLESS GENERATOR.
4	250 KW EMERGENCY DIESEL GENERATOR SET	1	$\triangle 1^{9}$	4650 -57		7-16-76	22-50053C	716-1505-W	GENERAL MOTORS	7-27-77			7,630#	MODEL 12V-71, 12 CYLINDER, TWO STROKE CYCLE, RADIATOR COOLED DIESEL ENGINE, COUPLED TO A 250 KW KATO ENGINEERING CO. ALTERNATING CURRENT BRUSHLESS GENERATOR.
5	MAIN SWITCHBOARD	1	$\triangle 1^{9}$	4650 -501		10-1-76	23-500052	1001-1514-W	I.T.E. MANUFACTURE	6-24-77			24,134#	FOR PROTECTION & REMOTE CONTROL OF (2) 2500 KW CONTINUOUSLY RATED GENERATORS, ONE TURBO DRIVEN & ONE DIESEL DRIVEN, SWITCHBOARD WILL DISTRIBUTE 450 VOLT-ALTERNATING CURRENT TO SHIPS SERVICE
6	EMERGENCY SWITCHBOARD	1	$\triangle 1^{9}$	4650 -501		10-1-76	23-500052	1001-1514-W	I.T.E. MANUFACTURE	7-22-77			2,638#	FOR PROTECTION & CONTROL OF (1) 250 KW CONTUOUSLY RATED DIESEL DRIVEN GENERATOR, SWITCHBOARD WILL DISTRIBUTE 450 VOLT & 117 VOLT ALTERNATING CURRENT & 24 VOLT D.C.
7	DIESEL GENERATOR ROOM AUTOMATIC LOUVER	2		4650 -33		2-11-77	22-504859C	211-1519-X	McCAFFRAY CO.	7-22-77				ONE (1) 30" x 60" MULTILOUVERED VENTILATION DAMPER, ONE (1) 44" x 42" MULTILOUVERED VENTILATION DAMPER, MODEL M-445A HONEYWELL MOTORS ENERGIZED FROM THE EMERGENCY GENERATOR
8														
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11	COMPRESSORS													
12	AIR COMPRESSOR (CONTROL AIR)	1	$\triangle 1^{9}$	4650 -42		8-6-76	22-500024	806-1511-W	NASH ENGINEERING CO.	8-26-77			1,068#	MODEL MD-623C "NASH HYTOR" ELEC. MOTOR DRIVE CENTRIFUGAL DISPLACEMENT TYPE, DISCHARGE PRESSURE 85 PSIG, FREE AIR CAPACITY 50 CFM, 24 BHP
13	AIR COMPRESSOR (EMERGENCY AIR)	1	$\triangle 1^{9}$	4650 -54		11-5-76	22-500024A	1105-1500-W	WORTHINGTON	8-5-77			287#	MODEL 3CHB, TWO CYLINDER, TWO STAGE, SINGLE ACTING, AIR COOLED TYPE, MOTOR DRIVE THRU V-BELTS, DISCH. PRESS. 125 PSIG, FREE AIR CAPACITY 10.2 CFM, 3.04 BHP
14	AIR COMPRESSOR (SHIPS SERVICE AIR)	2	$\triangle 1^{9}$	4650 -54		11-5-76	22-500024A	1105-1500-W	WORTHINGTON	8-5-77			4,064#	MODEL M-80-H, SIX CYLINDER, TWO STAGE, SINGLE ACTING, AIR COOLED RADIAL TYPE, MOTOR DRIVE THRU V-BELTS, DISCH PRESS. 150 PSIG, FREE AIR CAPACITY 280 CFM, 85 BHP
15														

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HULL 4650 & 51

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1	MOTORS													
2	CAPSTAN	1	$\triangle 2^{22}$	4650 -511		5-3-77	23-5000505	503-1530-X	RELIANCE ELECTRIC CO.	10-21-77			1,700#	75/75 HP, 1800/450 RPM, 440 V, 3 PHASE, 60 HERTZ, ½ HOUR VARYING DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, "D" FLANGE, GEAR COUPLING, HEATER, DISC. BRAKE
3	CARGO REFRIGERATION PLANT	8	$\triangle 2^{22}$	4650 -507		9-24-76	23-500050C	924-1518-W	RELIANCE ELECTRIC CO.	5-20-77			1,150#	150 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
4	REFRIGERANT TRANSFER PUMP	1	$\triangle 2^{22}$	4650 -507		9-24-76	23-500050C	924-1518-W	RELIANCE ELECTRIC CO.	5-20-77			125#	10 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
5	BOW THRUSTER	1	$\triangle 2^{22}$	4650 -514		12-7-76	23-500050J	1207-1521-W	RELIANCE ELECTRIC CO.	6-3-77			5,300#	1000 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ CONTINUOS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED FLEXIBLE COUPLING
6	BOW THRUSTER HYDRAULIC PUMP	1	$\triangle 2^{22}$	4650 -514		12-7-76	23-500050J	1207-1521-W	RELIANCE ELECTRIC CO.	6-3-77			92#	5 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERT, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBE COUPLING.
7	MAIN CONDENSATE PUMP	2	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			385#	40 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
8	EVAPORATOR SALT WATER OVERBOARD PUMP	2	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			190#	15 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
9	EVAPORATOR FEED WATER PUMP	2	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			190#	15 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
10	BILGE BALLAST & SALT WATER SERVICE PUMP	1	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			310#	30 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
11	TANK CLEANING PUMP	1	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			286#	30 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
12	SALT WATER SERVICE PUMP	1	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			310#	30 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
13	BILGE PUMP	1	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			310#	30 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
14	FIRE PUMP	1	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			550#	75 HP, 3600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
15	FIRE & TANK WASHING PUMP	1	$\triangle 2^{22}$	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			800#	100 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	MOTORS													
2	MAIN CIRCULATING PUMP	1	△2 22	4650 -503		10-8-76	23-500050F	1008-1528-W	RELIANCE ELECTRIC CO.	4-22-77			4,200#	150/37.5 HP, 600/300 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, RIGID COUPLING
3	GRINDER (FLOOR PEDESTAL)	1		4650 -22		11-18-76	22-500015B	1118-1509-W	CINCINNATI ELECTRICAL TOOL CO.	7-29-77				2 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED
4	GRINDER (BENCH MOUNTED)	1		4650 -22		11-18-76	22-500015B	1118-1509-W	CINCINNATI ELECTRICAL TOOL CO.	7-29-77				¾ HP, 3600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED
5	SALT WATER SERVICE PUMP	1	△2 22	4650 -502		10-6-76	23-500050E	1006-1529-W	RELIANCE ELECTRIC CO.	4-22-77			350#	40 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, FLEXIBLE COUPLING
6	TRIM TANK TRANSFER PUMP	1	△2 22	4650 -502		10-6-76	23-500050E	1006-1529-W	RELIANCE ELECTRIC CO.	4-22-77			172#	15 HP, 1800 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
7	AIR CONDITIONING REFRIGERATION COMPRESSOR	2	△2 22	4650 -512		9-17-76	23-500050B	917-1534-W	RELIANCE ELECTRIC CO.	5-20-77			570#	75 HP, 1800 RPM, 440V, 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
8	SHIPS SERVICE REFRIGERATION COMPRESSOR	2	△2 22	4650 -512		9-17-76	23-500050B	917-1534-W	RELIANCE ELECTRIC CO.	5-20-77			255#	25 HP, 1800 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
9	PIPE & BOLT THREADING MACHINE	1		4650 -85		11-23-76	22-500015D	1123-1506-W	BLACK & DECKER	7-29-77				½ HP, 680 RPM, 115V, SINGLE PHASE, 60 HERTZ, ENCLOSED TYPE, HORIZONTAL MOUNTED, GEAR DRIVEN
10	EMERGENCY AIR COMPRESSOR	1	△2 22	4650 -506		12-15-76	23-500050M	1215-1531-W	RELIANCE ELECTRIC CO.	6-24-77			77#	5 HP, 1800 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, V-BELT COUPLED
11	SHIPS SERVICE AIR COMPRESSOR	2	△2 22	4650 -506		12-15-76	23-500050M	1215-1531-W	RELIANCE ELECTRIC CO.	6-24-77			700#	100 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, V-BELT COUPLED
12	LATHE	1	△2 22	4650 -513		12-22-76	23-500050N	1222-1527-W	RELIANCE ELECTRIC CO.	6-17-77			36#	2 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, V-BELT COUPLED
13	DRILL PRESS	1	△2 22	4650 -513		12-22-76	23-500050N	1222-1527-W	RELIANCE ELECTRIC CO.	6-17-77			26#	1 HP, 1800 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, GEAR COUPLED
14	LIFEBOAT WINCHES	2	△2 22	4650 -517		2-4-77	23-500050X	204-1541-X	RELIANCE ELECTRIC CO.	9-7-77			251#	20 HP, 1800 RPM, 400 V, 3 PHASE, 60 HERTZ, 15 MIN. INTERMITTENT, WATERPROOF TOTALLY ENCLOSED, VERTICAL MOUNTED, FLEXIBLE COUPLING
15	FORCED DRAFT BLOWER	2	△2 22	4650 -510		12-10-76	23-500050G	1210-1536-W	RELIANCE ELECTRIC CO.	8-26-77			1,150#	250/62.5 HP, 1800/900 RPM, 400V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING

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ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	MOTORS													
2	VACUUM PRIMING PUMPS	2		4650 -16		8-6-76	22-500012G	806-1510-W	RELIANCE ELECTRIC CO.	6-3-77				3 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, RIGID COUPLING
3	CARGO COIL HOT WATER CIRCULATING PUMP	2		4650 -17		9-8-76	22-500012	908-1503-W	RELIANCE ELECTRIC CO.	6-3-77				5 HP, 3600 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
4	DOMESTIC WATER PUMP	2		4650 -17		9-8-76	22-500012	908-1503-W	RELIANCE ELECTRIC CO.	6-3-77				5 HP, 3600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
5	ATMOSPHERIC DRAIN PUMP	2		4650 -17		9-8-76	22-500012	908-1503-W	RELIANCE ELECTRIC CO.	6-3-77				10 HP, 3600 RPM 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED, CLOSE COUPLED
6	ICE WATER CIRCULATING PUMP	1		4650 -17		9-8-76	22-500012	908-1503-W	RELIANCE ELECTRIC CO.	6-3-77				0.5 HP, 1200 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
7	HOT WATER CIRCULATING PUMP	1		4650 -17		9-8-76	22-500012	908-1503-W	RELIANCE ELECTRIC CO.	6-3-77				0.5 HP, 1200 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
8	STEERING GEAR HYDRAULIC PUMP	2	△2 22	4650 -516		11-8-76	23-500050K	1108-1518-W	RELIANCE ELECTRIC CO.	7-1-77			570#	75 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
9	CARGO LOADING SIDEPORT HYDRAULIC PUMP	2	△2 22	4650 -521		3-7-77	23-500050Y	307-1520-X	RELIANCE ELECTRIC CO.	9-9-77			77#	2 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
10	MACHINERY SPACE BILGE SUMP PUMP	1	△2 22	4650 -523		2-23-77	23-500050U	223-1522-X	RELIANCE ELECTRIC CO.	6-17-77			77#	5 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, V-BELT COUPLED
11	HATCH COVER WINCHES	10	△2 22	4650 -508		1-21-77	23-500050W	121-1518-X	RELIANCE ELECTRIC CO.	11-11-77			408#	15/3.75 HP, 1800/450 RPM, 440V, 3 PHASE, 60 HERTZ, ½ HR. VARYING DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING, SPACE HEATER (5 RIGHT HAND MOTORS & 5 LEFT HAND)
12	AXIAL FAN (SIZE MA54C5)	2	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			365#	25 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED, CLOSE COUPLED
13	AXIAL FAN (SIZE MA54C9)	3	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			570#	35/4.37 HP, 600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, VERTICAL MOUNTED, CLOSE COUPLED
14	AXIAL FAN (SIZE 200 AF)	1	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			125#	10 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, VERTICAL MOUNTED, CLOSE COUPLED
15	PROPELLER FAN (SIZE 14 PF)	2	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			25#	⅓ HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED, CLOSE COUPLED

AUTOMATION INDUSTRIES, INC.
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(Old QD 85)

HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	MOTORS													
2	PROPELLER FAN (SIZE 24 PF)	1	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			30#	3/4 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED, CLOSE COUPLED
3	AXIAL FAN (SIZE 40 AF)	2	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			30#	2 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED, CLOSE COUPLED
4	AXIAL FAN (SIZE 100 AF)	1	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			76#	5 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, VERTICAL MOUNTED, CLOSE COUPLED
5	AXIAL FAN (SIZE MA38A9)	24	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			185#	20/5 HP, 1800/900 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED, CLOSE COUPLED
6	AXIAL FAN (SIZE MA38A7)	1	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			180#	10/2.5 HP, 1200/600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, VERTICAL MOUNTED, CLOSE COUPLED
7	CENTRIFUGAL FAN (SIZE 2½ CF)	2	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			15#	1/20 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
8	CENTRIFUGAL FAN (SIZE 100 CF)	2	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			125#	5 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
9	CENTRIFUGAL FAN (SIZE 60 CF)	1	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			105#	3 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
10	CENTRIFUGAL FAN (SIZE MA5540BL)	1	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			125#	10 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, BELT DRIVE
11	CENTRIFUGAL FAN (SIZE 7½ CF)	1	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			33#	½ HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
12	CENTRIFUGAL FAN (SIZE 30 CF)	3	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			36#	1½ HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
13	CENTRIFUGAL FAN (SIZE 10 CF)	1	△2 22	4650 -31		7-23-76	22-500027	723-1500-W	RELIANCE ELECTRIC CO.	7-22-77			33#	½ HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, CLOSE COUPLED
14	ACCOMMODATION LADDER WINCH	2	△2 22	4650 -518		3-21-77	23-500050Z	321-1516-X	RELIANCE ELECTRIC CO.	10-20-77			172#	7.5/3.75 HP, 1800/900 RPM, 440 V, 3 PHASE, 60 HERTZ, 15 MIN. DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED, GEARED COUPLING
15	ANCHOR WINDLASS	1	△2 22	4650 -515		10-22-76	23-500050H	1022-1522-W	RELIANCE ELECTRIC CO.	8-26-77			1,000#	150 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	MOTORS													
2	EVAPORATOR DISTILLATE PUMP	1		4650 -53		8-12-76	22-500005	812-1503-W	RELIANCE ELECTRIC, CO.	7-24-77				2 HP, 3500 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED
3	MAIN CONDENSER	2	△2 22	4650 -509		9-17-76	23-500050A	917-1530-W	RELIANCE ELECTRIC CO.	4-22-77			288#	20 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
4	CARGO PUMP	2		4650 -14		3-13-77	22-500012B	315-1501-X	RELIANCE ELECTRIC CO.	9-9-77				15 HP, 1200 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED
5	GLAND EXHAUSTER FAN	1	△2 22	4650 -41		10-11-76	22-500027C	1011-1531-W	RELIANCE ELECTRIC CO.	6-3-77			35#	2 HP, 3600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED
6	CARGO DEHMIDIFICATION PLANT - DRY AIR FAN	1	△2 22	4650 -92		7-20-76	22-500047	720-1510-W	RELIANCE ELECTRIC CO.	7-1-77			125#	10 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED
7	CARGO DEHUMIDIFICATION PLANT - WET AIR FAN	1	△2 22	4650 -92		7-20-76	22-500047	720-1510-W	RELIANCE ELECTRIC CO.	7-1-77			77#	7½ HP, 3600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED
8	CARGO DEHUMIDIFICATION PLANT - BED DRIVE	1	△2 22	4650 -92		7-20-76	22-500047	720-1510-W	RELIANCE ELECTRIC CO.	7-1-77			20#	¼ HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED
9	CENTRAL STATION UNIT FAN	2		4650 -83		8-17-76	22-500028A	817-1510-W	RELIANCE ELECTRIC CO.	7-22-77				25 HP, 3600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED, BELT DRIVE
10	STORES CONVEYOR	1		4650 -72		9-1-76	22-500025P	901-1500-W	RELIANCE ELECTRIC CO.	9-16-77				3 HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED
11	STORES CONVEYOR WINCH - DRIVE	1		4650 -72		9-1-76	22-500025P	901-1500-W	RELIANCE ELECTRIC CO.	9-16-77				1½ HP, 1800 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED
12	FUEL OIL SERVICE PUMP	2	△2 22	4650 -504		9-16-76	23-500050	916-1521-W	RELIANCE ELECTRIC CO.	4-22-77			276#	15/7.5 HP, 1800/900 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, FLEXIBLE COUPLING
13	FUEL OIL TRANSFER PUMP	1	△2 22	4650 -504		9-16-76	23-500050	916-1521-W	RELIANCE ELECTRIC CO.	4-22-77			760#	25/12.5 HP, 900/450 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, FLEXIBLE COUPLING
14	LUBE OIL SERVICE PUMP	2	△2 22	4650 -504		9-16-76	23-500050	916-1521-W	RELIANCE ELECTRIC CO.	4-22-77			385#	40 HP, 18000 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, FLEXIBLE COUPLING
15	EMERGENCY LUBE OIL SERVICE PUMP	1	△2 22	4650 -504		9-16-76	23-500050	916-1521	RELIANCE ELECTRIC CO.	4-22-77			379#	5 HP, 900 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERTICAL MOUNTED, FLEXIBLE COUPLING

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

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1	MOTORS													
2	DIESEL OIL TRANSFER PUMP	1	$\triangle 2^{22}$	4650 -504		9-16-76	23-500050	916-1521-W	RELIANCE ELECTRIC CO.	4-22-77			65#	3 HP, 1800 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, FLEXIBLE COUPLING
3	PORT FEED PUMP	1	$\triangle 2^{22}$	4650 -505		9-30-76	23-500050D	930-1516-W	RELIANCE ELECTRIC CO.	5-20-77			570#	60/30 HP 1800/900, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED, GEAR MOTOR, FLEXIBLE COUPLING
4	CONTROL AIR COMRESSOR	1		4650 -42		8-6-76	22-500024	806-1511-W	RELIANCE ELECTRIC CO.	8-26-77				25 HP, 3600 RPM, 440 V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZONTAL MOUNTED
5	CONTAINER GUIDE HYDRAULIC PUMP	1	$\triangle 2^{22}$	4650 -522		2-4-77	23-500050T	204-1530-X	RELIANCE ELECTRIC CO.	9-9-77			105#	7½ HP, 1800 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED HORIZONTAL MOUNTED, FLEXIBLE COUPLING
6	LINE SHAFT BEARING LUBRICATING	1	$\triangle 2^{22}$	4650 -95		6-20-77	22-500012H	620-1506-X	RELIANCE ELECTRIC CO.	12-16-77			25#	½ HP, 1800 RPM, 440V, 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, TOTALLY ENCLOSED, HORIZONTAL MOUNTED
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1	MISCELLANEOUS EQUIPMENT													
2	CENTRAL PRIMING SYSTEM	1		4650 -16		8-6-76	22-500126	806-1510-W	NASH ENGINEERING CO.	6-3-77				CONSISTS OF TWO VACUUM PRIMING PUMPS MOUNTED ON A COMMON SEALING WATER TANK & CONNECTED TO A VACUUM TANK, EACH PUMP CAN REMOVE 34.5 CFM OF AIR FROM PRIMING SYSTEM
3	CENTRALIZED CONTROL SYSTEM	1		4650 -19		9-13-76	22-500087	913-1502-W	TANO CORP.	6-24-77				BASICALLY A SOLID STATE ELECTRONIC TYPE, WILL MONITOR & CONTROL SHIPS MAIN PROPULSION PLANT, SELECTED AUXILIARIES, SHIPS SERVICE SYSTEMS, REFRIGERATION & AC SYSTEMS.
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5	BOW THRUSTER	1		4650 -68		6-22-76	22-500068	622-1501-W	BIRD-JOHNSON CO.	6-3-77			19,470#	KA ME WA MODEL NO. 80/3S/CP, FOUR BLADED SINGLE PROPELLER CONTROLLABLE PITCH TYPE, EFFECTIVE THRUST OF 25,000 LBS IN EITHER DIRECTION, 79" DIA. PROPELLER, 295 RPM
6	HYDRAULIC SYSTEM FOR CONTAINER GUIDES	1		4650 -69		1-18-77	22-500124	118-1507-X	YORK INDUSTRIES INC.	10-7-77			4,145#	CONSISTS OF A HYDRAULIC POWER UNIT ASSEMBLY & TWO (2) HYDRAULIC CYLINDER ACTUATOR ASSEMBLIES, ONE (1) FOR EACH CONTAINER GUIDE SECTION
7	STEAM WHISTLE	1		4650 -70		11-29-76	22-500031	1129-1511-X	LESLIE CO.	10-21-77			308#	TYPE 300 DVE-5K LESLIE-TYFON STEAM JACKETED DIAPHRAGM TYPE, OPERABLE BY REMOTE AUTO. & "AT-WILL" ELECTRIC CONTROLS, SUPPLIED WITH DESUPERHEATED STEAM AT 150 PSIG.
8	ELEVATOR	1		4650 -71		10-20-76	22-500025C	1020-1505-W	MONTGOMERY ELEVATOR CO.	11-4-77				DESIGNED TO CARRY A LOAD OF 1500 LBS @ 100 FT. PER MIN, ELECTRIC MOTOR DRIVEN, UNDERSLUNG, AUTOMATIC PUSHBUTTON, SELF SERVICE, SELF LEVELING TYPE
9	STORES CONVEYOR	1		4650 -72		9-1-76	22-500025P	901-1500-W	ERIEZ MAGNETICS	9-16-77				COMPLETE WITH ELEC-POWERED INCLINED REVERSIBLE SLIDER BELT TYPE CONVEYOR, ELECT. POWERED REVERSIBLE WINCH & HANDLING TACKLE ELEC. MOTOR CONTROLLERS, FITTINGS FOR OPERATION
10	ULTRA-VIOLET WATER PURIFIER	2		4650 -78		1-12-77	22-500093	112-1500-X	BULL & ROBERTS INC.	5-15-77				MODEL EP-24 RCB UNIT, COMPLETE WITH REMOTE CONTROL BOX & AUDIBLE ALARM, AUTO. SHUT OFF VALVES & PROVISIONS FOR CLEANING, FLOW RATE OF 1440 GPH, WORKING PRESSURES UP TO 100 PSIG
11	PORTABLE TANK CLEANING MACHINE	2		4650 -79		10-15-76	22-500079	1015-1518-W	GAMLEN CHEMICAL CO.	3-3-78				SUITABLE FOR USE WITH SALT WATER & CLEANING CHEMICALS AT A PRESSURE OF 170 PSIG, TEMP. OF 180°F, CAPACITY OF 150 GPM, CONSTRUCTED OF ANTI-CORROSIVE MATERIALS
12	GARBAGE CHUTE VALVE	1		4650 -81		10-8-76	22-506100	1008-1501-W	HILTON PRODUCTS CO.	7-29-77				24" SIZE, 150# FLANGED, PULP STOCK GATE VALVE OF THE SELF-CLEANING, NON-CLOGGING TYPE OF STAINLESS STEEL CONSTRUCTION WITH WATERTIGHT ELEC. MOTOR WITH PROVISIONS FOR MANUAL CONTROL
13	BOILER WATER AND CONDENSATE TREATMENT SYSTEMS	2		4650 -82		9-21-76	22-500041	921-1506-W	BULL & ROBERTS INC.	3-22-77				BOILER WATER TREATMENT SYS. WILL MEASURE THE BOILER WATER CONDUCTIVITY & AUTO. OR MANUALLY CONTROL THE BOILER WATER CHEMICAL FEED. CONDENSATE TREATMENT SYS. WILL MEASURE THE PH
14	CARBON DIOXIDE FIRE EXTINQUISHIN SYSTEM	1		4650 -56		4-7-77	22-500043	407-1503-X	WALTER KIDDE & CO., INC.	1-20-78				FIXED MAIN FIRE EXTINQUISHING SYSTEM FOR THE MAIN MACHINERY SPACE, ALL CONTAINER & CARGO HOLDS, THE 3 CARGO OIL TANKS, ALL BOSUN'S & ENGINE STORE RMS, SHAFT-ALLEY, STEERING GEAR RM, WINDLASS MACHINERY SPACE, BOW THRUSTER MACHY. RM. & M.G. RM. FOWARD, MANUAL CONTROL & "BREAK-GLASS" PULL BOXES
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				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	MISCELLANEOUS EQUIPMENT													
2	CARBON DIOXIDE FIRE EXTINGUISHING SYSTEM	1		4650 -56		4-7-77	22-500043	407-1503-X	WALTER KIDDE & CO., INC.	1-20-78				FIXED LOCAL FIRE EXTINGUISHING SYSTEM FOR THE EMERGENCY GENERATOR RM, ARRANGED FOR AUTOMATIC / REMOTE ACTUATION
3	CARBON DIOXIDE FIRE EXTINGUISHING SYSTEM	1		4650 -56		4-7-77	22-500043	407-1503-X	WALTER KIDDE & CO., INC.	1-20-78				FIXED LOCAL FIRE EXTINGUISHING, SYSTEM FOR THE PAINT LOCKER FOWARD, ARRANGED FOR LOCAL RELEASE
4	CARBON DIOXIDE FIRE EXTINGUISHING SYSTEM	1		4650 -56		4-7-77	22-500043	407-1503-X	WALTER KIDDE & CO., INC.	1-20-78				FIXED LOCAL FIRE EXTINGUISHING SYSTEM FOR THE ENGINEERS PAINT LOCKER, ARRANGED FOR LOCAL RELEASE
5	CARBON DIOXIDE FIRE EXTINGUISHING SYSTEM	1		4650 -56		4-7-77	22-500043	407-1503-X	WALTER KIDDE & CO., INC.	1-20-78				FIXED LOCAL FIRE EXTINGUISHING SYSTEM FOR THE FORWARD PUMP ROOM, ARRANGED FOR REMOTE PULL BOX
6	CARBON DIOXIDE FIRE EXTINGUISHING SYSTEM	1		4650 -56		4-7-77	22-500043	407-1503-X	WALTER KIDDE & CO., INC.	1-20-78				FIXED LOCAL FIRE EXTINGUISHING SYSTEM FOR AFT PUMP ROOM, ARRANGED FOR REMOTE PULL BOXES
7	CARBON DIOXIDE FIRE EXTINGUISHING SYSTEM	1		4650 -56		4-7-77	22-500043	407-1503-X	WALTER KIDDE & CO., INC.	1-20-78				HOSE REEL FIRE EXTINGUISHING UNIT FOR THE MAIN MACHINERY SPACE, ARRANGED WITH CUTTER VALVES WITH INDEPENDENT PULL TO PERMIT RELEASE FROM A SINGLE CYLINDER
8	SMOKE DETECTION SYSTEM	1		4650 -56		4-7-77	22-500043	407-1503-X	WALTER KIDDE & CO., INC.	1-20-78				FOR ALL CARGO HOLDS, BOSUN & ENGINE STOREROOMS, SHAFT ALLEY, STEERING GEAR RM, WINDLASS MACHY. SPACE, BOW THRUSTER MACHY RM, M.G. RM. FWD. WILL DETECT SMOKE AUDIBLY, VISUALLY & OLFACTIBLY
9	SIDEPORT (CARGO)	2	$\triangle 2^{23}$	4650 -143		1-25-77	21-500124A	125-1500-X	OVERBEKE-KAIN CO.	10-21-77				MODEL "SP-700R", WATERTIGHT 10'-9½" X 8'-10" HYDRAULIC SIDEPORT, MANUAL DOGGING & UNDOGGING, PROVISIONS FOR MANUAL OPERATION, 17,000# CAPACITY, PORT & STBD.
10	SIDEPORT (STORES)	1	$\triangle 2^{23}$	4650 -143		1-25-77	21-500124A	125-1500-X	OVERBEKE-KAIN CO.	10-21-77				MODEL "SP-600R", WATERTIGHT 7'-6" X 6'-0" HYDRAULIC OPERATED SIDEPORT, MANUAL DOGGING & UNDOGGING, PROVISIONS FOR MANUAL OPERATION, STBD. ONLY.
11	SLIDING DOOR (SHAFT ALLEY)	1	$\triangle 2^{23}$	4650 -141		11-17-76	21-500136A	1117-1500-X	WALZ & KRENZER INC.	8-11-77				HORIZONTAL ELECTRO-HYDRAULIC WATERTIGHT DOOR, POWER OPERATED FROM REMOTE & LOCAL POSITIONS, PROVISIONS FOR MANUAL OPERATION IN CASE OF POWER FAILURE.
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				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	FILTERS													
2	REFRIGERATION COOLED AIR FILTERS	2		4650 -64		12-13-76	22-500022A	1213-1523-W	HANKISON CORP.	2-4-77				COMPLETE WITH A HERMETRIC REFRIGERATION SYSTEM, CAPACITY 200 SCFM, DEW POINT AT LINE PRESS. 35°F MAX. PRESS. DROP 2PSI, MOTOR 1.5HP, LINE PRESSURE 150 PSIG
3	REFRIGERATION COOLED AIR FILTERS	1		4650 -64		12-13-76	22-500022A	1213-1523-W	HANKISON CORP.	2-4-77				COMPLETE WITH A HERMETRIC REFRIGERATION SYSTEM, CAPACITY 100 SCFM, DEW POINT AT LINE PRESSURE 35° F, MAX. PRESS. DROP 4PSI, MOTOR .5 HP, LINE PRESSURE 150 PSIG
4	AUTOMATIC ROLL AIR FILTER	3		4650 -94		9-9-76	22-504864	909-1501-W	CONTINENTAL AIR FILTERS, INC.	11-1-76				ONE (1) ROLL TYPE 75" x 48", 9095 CFM, MODEL MVM-75 FOR VERT. MOUNTING. TWO (2) ROLL TYPE 65" x 48", 8025 CFM, MODEL MVM 65 FOR VERTICAL MOUNTING, MANUAL-ROLL MARINE TYPE.
5	MAIN LUBE OIL FILTER COALESCER	1	$\triangle 1^{9}$	4650 -37		1-20-77	22-500023	120-1506-X	MARINE MOISTURE CONTROL CO., INC.	5-15-77			1,500#	REMOVEABLE EXPENDABLE FILTER ELEMENT, CAPACITY 300 GPH, OIL PRESS. 75 PSIG, OIL TEMP. INLET 100°F, OIL TEMP. HEATER OUTLET 160°F, THERMOSTATICALLY CONTROLLED ELECTRIC HEATER TO MAINTAIN OIL TEMP.
6	DIESEL OIL FILTER COALESCER	1	$\triangle 1^{9}$	4650 -37		1-20-77	22-500023	120-1506-X	MARINE MOISTURE CONTROL CO., INC.	5-15-77			335#	REMOVEABLE EXPENDABLE FILTER ELEMENT. CAPACITY 300 GPH, OIL PRESS. 75 PSIG, NO OIL HEATER, MANUAL DRAIN VALVE FOR CONTROLLING THE WATER LEVEL IN THE FILTER COALESCER SUMP
7	DIESEL GENERATOR LUBE OIL FILTER COALESCER	1.	$\triangle 1^{9}$	4650 -37		1-20-77	22-500023	120-1506-X	MARINE MOISTURE CONTROL CO., INC.	5-15-77			500#	REMOVEABLE EXPENDABLE FILTER ELEMENT, CAPACITY 45 GPH, OIL PRESS. 75 PSIG, OIL TEMP. INLET 100°F, OIL TEMP. HEATER OUTLET 160°F, THERMOSTATICALLY CONTROLLED ELECTRIC HEATER TO MAINTAIN OIL TEMP
8	STERN TUBE FILTER COALESCER	1	$\triangle 1^{9}$	4650 -37		1-20-77	22-500023	120-1506-X	MARINE MOISTURE CONTROL CO., INC.	5-15-77			500#	REMOVEABLE EXPENDABLE FILTER ELEMENT, CAPACITY 45 GPH, OIL PRESS. 75 PSIG, OIL TEMP. INLET 100°F, OIL TEMP. HEATER OUTLET 160°F, THERMOSTATICALLY CONTROLLED ELECTRIC HEATER TO MAINTAIN OIL TEMP
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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	DISTILLERS													
2	TWO-STAGE FLASH TYPE DISTILLING PLANT	1	△9	4650 -53		8-12-76	22-50005	812-1503-W	RILEY - BEAID INC.	7-4-77			15,700#	MAXIM MODEL FS25C2, SELF CONTAINED PACKAGED TYPE, CAPACITY ON 10 PSIA BLEED STEAM 20,000 GPD, CAPACITY ON 5 PSIG STEAM 24,000 GPD, SEA SALT IN DISTILLATE MAX. GRAINS/GAL. 0.25
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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	ENGINEERS EQUIPMENT													
2	DRILL PRESS	1		4650 -21		11-10-76	22-500015A	1110-1507-W	ROYERSFORD FOUNDRY & MACHINE CO., INC.	7-29-77			1,200#	21" MOTOR DRIVEN, UPRIGHT BACK GEARED UNIT, WITH STATIONARY HEAD, MANUAL WHEEL & LEVER FEED, POWER FEED, AUTOMATIC STOP & ADJUSTABLE TABLE, DRILLS HOLES UP TO 1¼" DIA.
3	GRINDER	1		4650 -22		11-18-76	22-500015B	1118-1509-W	CINCINNATI ELECTRICAL TOOL CO.	7-29-77			670#	TYPE WTA-Y, 12" SIZE, MOTOR DRIVEN, FLOOR PEDESTAL MOUNTED, DOUBLE WHEEL, COMBINED WET & DRY TYPE, 2 HP, 1800 RPM
4	GRINDER	1		4650 -22		11-18-76	22-500015B	1118-1509-W	CINCINNATI ELECTRICAL TOOL CO.	7-29-77			110#	TYPE VHA, 8" SIZE, MOTOR DRIVEN, BENCH MOUNTED, DOUBLE WHEEL, DRY TYPE, ¾ HP, 3600 RPM
5	LATHE	1		4650 -23		11-29-76	22-500015	1129-1510-W	SOUTH BEND LATHE WORKS	7-29-77			2,500#	MODEL CL 117E, 16"×8', UNDERNEATH MOTOR DRIVEN BACK GEARED, CONE HEAD UNIT, 8 SPINDLE SPEEDS, 16¼" SWING OVERBED, 56" BETWEEN CENTERS, 2 HP, 1800 RPM
6	PIPE & BOLT THREADING MACHINE	1		4650 -85		11-23-76	22-500015D	1123-1506-W	TELEDYNE OSTER	7-29-77			305#	OSTER MODEL 655 PIPE MASTER, MOBILE WHEEL STAND MOUNTED TYPE WITH ELEC. MOTOR DRIVE, BLACK & DECKER SPECIAL DESIGN UNIVERSAL MOTOR, ½ HP, 680 RPM, GEAR DRIVE, THREAD GAGES ⅛" THRU 2"
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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

FRAME 16 OF 24

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. M4650-111-5

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	CONTROLLERS													
2	LIFEBOAT WINCH MOTOR	2		4650 -540		1-28-77	23-50005IN	128-1520-X	CUTLER-HAMMER, INC	10-21-77				20 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
3	CONTAINER GUIDE HYDRAULIC PUMP	1		4650 -546		2-4-77	23-50005IF	204-1527-X	CUTLER-HAMMER, INC.	9-16-77				7½ HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
4	EMERGENCY AIR COMPRESSOR	1		4650 -530		12-22-76	23-50005IG	1222-1529-W	CUTLER-HAMMER, INC	8-5-77				5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
5	LATHE	1		4650 -536		12-22-76	23-50005IB	1222-1528-W	CUTLER-HAMMER, INC.	7-29-77				2 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
6	DRILL PRESS	1		4650 -536		12-22-76	23-50005IB	1222-1528-W	CUTLER-HAMMER, INC.	7-29-77				1 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
7	STERN TUBE BEARING LUBE OIL PUMP	1		4650 -		4-25-77	23-50005IU	425-1517-X	CUTLER-HAMMER, INC.	9-2-77				¼ HP, ACROSS-THE-LINE, MANUAL TYPE, 115V SINGLE PHASE, 60 HERTZ, MANUAL OPERATION, DRIPPROOF ENCLOSURE
8	AXIAL FAN (SIZE 200 AF)	1		4650 -527		12-22-77	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC.	7-22-77				10 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
9	PROPELLER FAN (SIZE 14 PF)	2		4650 -527		12-22-77	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC,	7-22-77				⅓ HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
10	PROPELLER FAN (SIZE 24 PF)	1		4650 -527		12-22-77	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC.	7-22-77				¾ HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
11	AXIAL FAN (SIZE 40 AF)	2		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC.	7-22-77				2 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
12	AXIAL FAN (SIZE, 100 AF)	1		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC.	7-22-77				5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
13	CENTRIFUGAL FAN (SIZE 2½ CF)	2		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC.	7-22-77				1/20 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
14	CENTRIFUGAL FAN (SIZE 100 CF)	2		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC.	7-22-77				5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
15	CENTRIFUGAL FAN (SIZE 60 CF)	1		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC.	7-22-77				3 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	CONTROLLERS													
2	CENTRIFUGAL FAN (SIZE MASS40BL)	1		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC	7-22-77				10 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
3	CENTRIFUGAL FAN (SIZE 7½ CF)	1		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC	7-22-77				½ HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
4	CENTRIFUGAL FAN (SIZE 30 CF)	3		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC	7-22-77				1½ HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
5	CENTRIFUGAL FAN (SIZE 10 CF)	1		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC	7-22-77				1½ HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
6	CENTRAL STATION UNIT FAN	2		4650 -527		12-22-76	23-50005IA	1222-1530-W	CUTLER-HAMMER, INC	7-22-77				25 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
7	FIRE PUMP	1		4650 -528		12-29-76	23-50005ID	1229-1503-W	CUTLER-HAMMER, INC	6-10-77				75 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
8	DISTILLER SALT WATER OVERBOARD PUMP	1		4650 -533		2-14-77	23-50005IP	214-1516-X	CUTLER-HAMMER, INC.	6-23-77				15 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
9	DISTILLER FEED PUMP	1		4650 -533		2-14-77	23-50005IP	214-1516-X	CUTLER-HAMMER, INC	6-23-77				15 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
10	DISTILLER DISTILLATE PUMP	1		4650 -533		2-14-77	23-50005IP	214-1516-X	CUTLER-HAMMER, INC	6-23-77				1.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
11	FORCED DRAFT BLOWER	2	△1^{9}	4650 -532		2-23-77	23-50005IR	223-1521-X	CUTLER-HAMMER, INC.	6-23-77			1,100#	250/62.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
12	ANCHOR WINDLASS HYDRAULIC PUMP MOTOR	1		4650 -538		1-26-77	23-50005IK	126-1519-X	CUTLER-HAMMER, INC.	10-7-77				150 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
13	FREON CIRCULATING PUMP	4		4650 -535		4-27-77	23-50005IV	427-1523-X	CUTLER-HAMMER, INC.	9-2-77				15 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
14	FREON PUMP OUT UNIT	1		4650 -535		4-27-77	23-50005IY	427-1523-X	CUTLER-HAMMER, INC.	9-2-77				10 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
15	CARGO PUMP	2		4650 -534		5-3-77	23-50005IX	503-1527-X	CUTLER-HAMMER, INC.	9-23-77				15 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE

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ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	CONTROLLERS													
2	MAIN FEED PUMP LUBE OIL PUMP	2		4650 -526		5-3-77	23-50005IW	503-1519-X	CUTLER-HAMMER, INC	9-23-77				1/8 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
3	BOW THRUSTER HYDRAULIC PUMP	1		4650 -537		12-29-76	23-50005IE	1229-1504-W	CUTLER-HAMMER, INC.	9-9-77				5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
4	CARGO LOADING SIDEPORT HYDRAULIC PUMP	2		4650 -544		3-28-77	23-50005IT	328-1513-X	CUTLER-HAMMER, INC.	10-21-77				2 HP, ACROSS-THE-LINE, MAGNETIC TYPE SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
5	HATCH COVER WINCHES	10		4650 -531		1-21-77	23-50005IJ	121-1521-X	CUTLER-HAMMER, INC.	12-23-77				15/3.75 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
6	BOW THRUSTER MAIN MOTOR	1	△9	4650 -542		2-10-77	23-50005IM	210-1546-X	CUTLER-HAMMER, INC.	9-9-77			1,300#	1000 HP, ACROSS-THE-LINE, MAGNETIC TYPE SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
7	BOILER WATER CHEMICAL FEED PUMP	1		4650 -541		6-10-77	23-50005IZ	610-1516-X	CUTLER-HAMMER, INC.	12-5-77				1/3 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
8	CONDENSATE WATER CHEMICAL FEED PUMP	1		4650 -541		6-10-77	23-50005IZ	610-1516-X	CUTLER-HAMMER, INC.	12-5-77				1/3 HP, ACROSS-THE-LINE, MAGNETIC TYPE, SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
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ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	CONTROLLERS													
2														
3														
4														
5														
6														
7	GROUP CONTROL CENTER "A"													
8	AIR CONDITIONING COMPRESSOR NO. 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				75 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
9	ATMOSPHERIC DRAIN PUMP No. 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				10 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
10	AUX. D/G DIESEL OIL DRIP TANK PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				1/3 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
11	CARGO COIL HOT WATER CIRC. PUMP No. 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
12	DIESEL OIL FILTER COALESCER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				1/2 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
13	DIESEL OIL TRANSFER PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				3 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
14	DOMESTIC WATER PUMP No. 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
15	FIRE & TANK WASHING PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				100 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE

FRAME 18 OF 24

BUILDERS PLAN NO. M4650-111-5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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AUTOMATION INDUSTRIES, INC.
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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.*	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	GROUP CONTROL CENTER "A"													
2	FUEL OIL SERVICE PUMP No 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				15/7.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
3	LUBE OIL SERVICE PUMP No 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				40 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
4	MAIN CIRCULATING PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				150/37.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
5	MAIN CONDENSATE PUMP No 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				40 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
6	MAIN VACUUM PUMP No 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20 HP, ACROSS-THE-LINE, MAGNETIC TYPE AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
7	SALT WATER SERVICE PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				30 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
8	SHIPS SERVICE AIR COMPRESSOR No 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				100 HP, ACROSS-THE-LINE, MAGNETIC TYPE AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
9	SHIPS STORES REFER COMPRESSOR No 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				25 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
10	TANK CLEANING PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				30 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
11	GROUP CONTROL CENTER "B"													
12	AIR CONDITIONING COMPRESSOR No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				75 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
13	AIR PREHEATER DRIVE (PORT)	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				2 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
14	AIR PREHEATER SOOT BLOWER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				¼ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
15	AIR PREHEATER SOOT BLOWER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				¼ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.*	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	GROUP CONTROL CENTER "B"													
2	ATMOSPHERIC DRAIN PUMP No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				10 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
3	BOILER FIXED SOOT BLOWER No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				⅙ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
4	BOILER FIXED SOOT BLOWER No 4	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				⅙ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
5	BOILER FIXED SOOT BLOWER No 6	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				⅙ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
6	BOILER RETRACTABLE SOOT BLOWER No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				⅓ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
7	BOILER RETRACTABLE SOOT BLOWER No 4	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				⅓ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
8	CARGO COIL HOT WATER CIRC. PUMP No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
9	CONTROL AIR COMPRESSOR	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				25 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
10	DOMESTIC WATER PUMP No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
11	FUEL OIL SERVICE PUMP No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				15/7.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
12	FUEL OIL TRANSFER PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				25/12.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
13	GLAND LEAKOFF EXHAUSTER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				2 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
14	MAIN CONDENSATE PUMP No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				40 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
15	MAIN VACUUM PUMP No 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	GROUP CONTROL CENTER "B"													
2	REFRIGERATION FILTER CONTROL AIR	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				½ HP, CIRCUIT BREAKER ONLY
3	SHIPS SERVICE AIR COMPRESSOR Nº 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				100 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
4	SHIPS STORES REFER COMPRESSOR Nº 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				25 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
5	SSTG. STARTING LUBE OIL PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				2 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
6	FIXED & RETRACTABLE SOOT BLOWERS & AIR PREHEATER	2		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				CIRCUIT BREAKERS ONLY
7	GROUP CONTROL CENTER "C"													
8	AIR PREHEATER DRIVE Nº 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				2 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
9	AIR PREHEATER SOOT BLOWER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				¼ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
10	AIR PREHEATER SOOT BLOWER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				¼ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
11	BILGE, BALLAST & S.W. SERVICE PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				30 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
12	BILGE PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				30 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
13	BOILER FIXED SOOT BLOWER Nº 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				⅙ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
14	BOILER FIXED SOOT BLOWER Nº 3	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				⅙ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
15	BOILER FIXED SOOT BLOWER Nº 5	1		4650 -525A		11-3-77	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				⅙ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	GROUP CONTROL CENTER "C"													
2	BOILER RETRACTABLE SOOT BLOWER Nº 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				⅓ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
3	BOILER RETRACTABLE SOOT BLOWER Nº 3	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				⅓ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
4	DEHUMIDIFIER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				WET AIR FAN 7.5 HP, DRY AIR FAN 10 HP, BED DRIVE ¼ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
5	ENGINE ROOM BILGE SUMP PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				1½ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
6	HOT WATER CIRCULATING PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				½ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
7	ICE WATER CIRCULATING PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				½ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
8	MAIN LUBE OIL FILTER COLESCER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				½ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
9	PORT FEED PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				60/30 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
10	PRIMING PUMP Nº 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				3 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF, ENCLOSURE
11	PRIMING PUMP Nº 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				3 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
12	TURNING GEAR	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				10 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF ENCLOSURE
13	HOT WATER STOWAGE TANK & HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				21 KW CIRCUIT BREAKER ONLY
14	SOOT BLOWERS FIXED RETRAC, AIR PREHEATER	2		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				CIRCUIT BREAKERS ONLY
15														

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

FRAME 20 OF 24

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

FRAME 21 OF 24

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	GROUP CONTROL CENTER "D-1"													
2	CARGO REFRIGERATION COMPRESSOR Nº 1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				150 HP, ACROSS-THE LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
3	CARGO REFRIGERATION COMPRESSOR Nº. 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	G-24-77				150 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
4	REFRIGERATED CARGO RECIRC. FAN Nº. 3-95-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
5	REFRIGERATED CARGO RECIRC. FAN Nº. 3-95-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
6	REFRIGERATED CARGO RECIRC. FAN Nº. 3-127-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
7	REFRIGERATED CARGO RECIRC. FAN Nº. 3-127-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
8	REFRIGERATED CARGO RECIRC. FAN Nº. 3-139-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
9	REFRIGERATED CARGO RECIRC. FAN Nº. 3-139-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
10	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	G-24-77				42 KW, CIRCUIT BREAKER ONLY
11	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
12	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
13	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
14	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
15	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	G-24-77				42 KW, CIRCUIT BREAKER ONLY

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	GROUP CONTROL CENTER "D-2"													
2	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
3	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	G-24-77				42 KW, CIRCUIT BREAKER ONLY
4	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
5	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
6	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
7	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				42 KW, CIRCUIT BREAKER ONLY
8	CARGO REFRIGERATION COMPRESSOR Nº. 3	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				150 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
9	CARGO REFRIGERATION COMPRESSOR Nº. 4	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	G-24-77				150 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
10	REFRIGERATED CARGO RECIRC. FAN Nº 3-107-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
11	REFRIGERATED CARGO RECIRC. FAN Nº. 3-107-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
12	REFRIGERATED CARGO RECIRC. FAN Nº 3-111-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
13	REFRIGERATED CARGO RECIRC. FAN Nº. 3-111-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
14	REFRIGERATED CARGO RECIRC. FAN Nº. 3-123-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
15	REFRIGERATED CARGO RECIRC. FAN Nº. 3-123-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	G-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION

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(Old QD 85)

HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	GROUP CONTROL CENTER "D-3"													
2	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
3	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
4	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
5	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
6	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				42 KW, CIRCUIT BREAKER ONLY
7	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
8	CARGO REFRIGERATION COMPRESSOR No. 5	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				150 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION.
9	CARGO REFRIGERATION COMPRESSOR No. 6	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				150 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
10	REFRIGERATED CARGO RECIRC. FAN No. 3-M2-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
11	REFRIGERATED CARGO RECIRC. FAN No. 3-M2-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION DRIPPROOF PROTECTION
12	REFRIGERATED CARGO RECIRC. FAN No. 3-M14-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
13	REFRIGERATED CARGO RECIRC. FAN No. 3-M14-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
14	REFRIGERATED CARGO RECIRC. FAN No. 3-M18-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
15	REFRIGERATED CARGO RECIRC. FAN No. 3-M18-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	GROUP CONTROL CENTER "D-4"													
2	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
3	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
4	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				42 KW, CIRCUIT BREAKER ONLY
5	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				42 KW, CIRCUIT BREAKER ONLY
6	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
7	REFRIGERATED CARGO DEFROSTER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				42 KW, CIRCUIT BREAKER ONLY
8	CARGO REFRIGERATION COMPRESSOR No. 7	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				150 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
9	CARGO REFRIGERATION COMPRESSOR No. 8	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				150 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
10	REFRIGERATED. CARGO RECIRC. FAN No. 3-M29-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
11	REFRIGERATED CARGO RECIRC. FAN No. 3-M29-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
12	REFRIGERATED CARGO RECIRC. FAN No. 3-M33-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
13	REFRIGERATED CARGO RECIRC. FAN No. 3-M33-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
14	REFRIGERATED CARGO RECIRC. FAN No. 3-M44-1	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
15	REFRIGERATED CARGO RECIRC. FAN No. 3-M44-2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC	6-24-77				20/2.5 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION

FRAME 22 OF 24

BUILDERS PLAN NO. M4650-111-5

Oct 1980 6X

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
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Oct 1980 6X

BUILDERS PLAN NO. M4650-111-5

FRAME 23 OF 24

41609 (Rev. A 4-69)
(Old QD 8:1)

HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	GROUP CONTROL CENTER "E"													
2	ASTERN GUARDIAN VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				1 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
3	AUX. LUBE OIL FILTER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				¼ HP, ACROSS-THE-LINE, MAGNETIC TYPE AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
4	BOILER BOTTOM BLOW VALVE (STBD)	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.133 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
5	BOILER BOTTOM BLOW VALVE (PORT)	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.133 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
6	BOILER SURFACE BLOW VALVE (STBD.)	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.133 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
7	BOILER SURFACE BLOW VALVE (PORT)	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.133 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
8	DIESEL GENERATOR PRE-LUBE OIL PUMP	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				¾ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
9	FEED DUMP BY-PASS VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.133 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
10	FEED MAKE-UP BY-PASS VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.133 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
11	FIRE PUMP CROSSOVER TO S.W. SERVICE VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.33 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
12	GARBAGE DUMP VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				1 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
13	LUBE OIL COOLER OVERBOARD DISCH. VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.133 HP ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
14	LUBE OIL SERVICE PUMP No. 2	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				40 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
15	MAIN CIRC. PUMP HIGH OVB'D. DISCHARGE VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				.33 HP ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS		REQUISITIONS		PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS		EST. WEIGHTS	REMARKS
				NO.	DATE APP.	DATE ISSUED	NUMBER				REC'D	REL'D		
1	GROUP CONTROL CENTER "E"													
2	MAIN CIRC. PUMP SCOOP SUCTION VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				2.6 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
3	MAIN CIRC. PUMP SCOOP DISCHARGE VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				2.6 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
4	MAIN CIRC. PUMP SUCTION VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				1 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
5	TURBO GENERATOR EXHAUST VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				1 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
6	1ST EXTRACTION TO 4TH STAGE HEATER VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				⅓ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
7	2ND HP EXTRACTION TO 3RD STAGE HEATER VALVE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				⅓ HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
8	AFTER COOLER HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				2 KW, CIRCUIT BREAKER ONLY
9	JACKET WATER AND LUBE OIL HEATER	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				18 KW, CIRCUIT BREAKER ONLY
10	GROUP CONTROL CENTER "F"													
11	VENTILATION SUPPLY FAN MACHINERY SPACE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				35/4.4 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
12	VENTILATION SUPPLY FAN MACHINERY SPACE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				35/4.4 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
13	VENTILATION SUPPLY FAN MACHINERY SPACE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				35/4.4 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
14	VENTILATION EXHAUST FAN MACHINERY SPACE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				25 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION
15	VENTILATION EXHAUST FAN MACHINERY SPACE	1		4650 -525A		11-3-76	23-500051	1103-1524-W	CUTLER-HAMMER, INC.	6-24-77				25 HP, ACROSS-THE-LINE, MAGNETIC TYPE, AUTOMATIC & SEMI-AUTOMATIC OPERATION, DRIPPROOF PROTECTION

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. M4650-111-5

FRAME 24 OF 24

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	SPECIAL TANKS													
2	LUBE OIL SLUDGE TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			300#	50 GALLON CAPACITY DWG. NO. M-4650-411-10-8
3	HOT WATER EXPANSION TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			160#	25 GALLON CAPACITY DWG. NO. M-4650-411-10-8
4	CHEMICAL MIXING & STORAGE TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			1150#	400 GALLON CAPACITY DWG. NO. M-4650-411-10-8
5	KEROSENE TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			380#	75 GALLON CAPACITY DWG. NO. M-4650-411-10-8
6	EMERGENCY DIESEL GENERATOR DAY TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			1800#	650 GALLON CAPACITY DWG. NO. M-4650-411-10-8
7	STERN TUBE HEAD LIMITING TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			200#	50 GALLON CAPACITY DWG. NO. M-4650-411-10-8
8	STERN. TUBE L.O. DRAIN TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			200#	25 GALLON CAPACITY DWG. NO. M-4650-411-10-8
9	LINE SHAFT BEARING L.O. TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			200#	25 GALLON CAPACITY DWG. NO. M-4650-411-10-8
10	HYDROPNEUMATIC TANK	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			620#	250 GALLON CAPACITY DWG. NO. M-4650-411-10-9
11	EMERGENCY AIR RECEIVER	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			275#	8 CUBIC FEET DWG. NO. M-4650-411-10-9
12	SHIPS SERVICE AIR RECEIVER	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			2460#	100 CUBIC FEET DWG. NO. M-4650-411-10-9
13	CONTROL AIR RECEIVER	1	—		—	—	—	—	BETHLEHEM STEEL CORP.	—			1000#	50 CUBIC FEET DWG. NO. M-4650-411-10-9
14	2500 KW DIESEL GENERATOR STARTING AIR TANKS	2	—		—	—	—	—	BETHLEHEM STEEL CORP.	—				75 CUBIC FEET DWG. NO. M4650-411-10-10
15														

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HULL 4650 & 51

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	SPECIFICATIONS DATE APP.	REQUISITIONS DATE ISSUED	REQUISITIONS NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	VENDOR PRINTS REL'D	EST. WEIGHTS	REMARKS
1	SEWAGE DISPOSAL													
2	SEWAGE SYSTEM	1		4650-73		1-6-77	22-500081	10G-1514-X	ST. LOUIS SHIP DIV. OF POTT INDUSTRIES	6-10-77			8,300#	FAST MODEL 50D4 PACKAGED DISCHARGE TYPE MARINE SANITATION DEVISE, COMPLETE WITH INLET TRAP, BY-PASS, TANKS, AIR BLOWER, AIRLIFTS, AERATOR, & SCOUR, TABLET TYPE CHLORINATOR & INSTRUMENTATION DESIGNED FOR A COMPLEMENT OF 55 PERSONS, SYSTEM RECEIVES & TREATS ALL DRAINS FROM WATER CLOSETS, SHOWERS, LAVORATORIES, GALLEY GARBAGE GRINDER, DISHWASHER, SINKS, LAUNDRY, HOSPITAL & AIR CONDITIONING COOLING COILS SYSTEM FOR USE WITH A FRESH WATER FLUSHING SYSTEM. DISCHARGE PUMP IS CAPABLE OF PUMPING AGAINST A DISCHARGE PRESSURE OF 50 PSIG SLUDGE HOLDING CAPACITY DESIGNED FOR PUMP-OUTS AT THREE MONTH INTERVALS,
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														

…ING OPERATION	OPERATOR LOCATION △	MATERIAL DRWG. VALVE NO.	BODY MATERIAL	TRIM MATERIAL	MANUFACTURES DRWG/ NO./FIG. NO.	REQN. NO.	FLUID MEDIUM	MATERIAL LIST DRAWING NO.	PIPING DIAG. REF. NO.	VALVE NO.
L SYSTEM — MANEUVERING)	30'0" ABL - STBD SIDE - FR 170	E-117	CHROME MOLY	STAINLESS STEEL	EDWARDS FIG NO 302	SD4400-A	STEAM	M-4650-371-04-1	1	1
L SYSTEM — MANEUVERING)	30'0" ABL - STBD SIDE - FR 168	E-116	CAST STEEL							2
	22'0" ABL - PORT SIDE - FR 163	E-100		BRONZE	ANCHOR DARLING CO.	SD4400				3
	16'0" FLAT - PORT SIDE - FR 179	W-138	FORGED STEEL	STAINLESS STEEL	EDWARDS FIG. NO. 1641 DRWG. NO. D-470418	SD5500-B		M-4650-372-11-1	2	4
	16'0" FLAT STBD SIDE - FR 179	W-138								5
	48'0" ABL - PORT SIDE - FR 175	W-138								6
	48'0" ABL - STBD SIDE - FR 175	W-138								7
	18'0" ABL - STBD SIDE - FR 166	AW-111	CAST STEEL	BRONZE	LUNKENHEIMER FIG. 1542	SD5500-A			3	8
	18'0" ABL - STBD SIDE - FR 164	AW-111								9
MUST BE OPEN FOR MAIN	11'2" ABL - PORT SIDE - FR 168	C-100	FABRICATED STEEL	MONEL	FABRI VALVE CO DRWG. NO. AA-754	SD4600-A	SALT WATER	M-4650-372-02-1	4	10
	8'0" ABL - STBD SIDE - FR 161	C-101								11
L SYSTEM - MANEUVERING)	9'9" ABL - STBD SIDE - FR 164	C-104								12
MUST BE OPEN FOR MAIN	21'0" ABL - PORT SIDE - FR 168	C-105	BRONZE		LUNKENHEIMER FIG. 1404	SD4600-C				13
	17'0" ABL - STBD SIDE - FR 166	C-109								14
	6'0" ABV. Ƀ - STBD SIDE OUTBD. - FR 163	AC-102				SD3800		M-4650-372-02-5	5	15
	6'0" ABV. Ƀ - PORT SIDE INBD. - FR 160	AC-102								16
	7'0" ABLBL - STBD SIDE OUTBD. - FR 160	AC-102								17
	14'0" ABV. Ƀ - STBD SIDE OUTBD. - FR 161	AC-102								18
	19'6" ABL - STBD SIDE - FR 159	AC-106				SD4500-A				19
	16'0" ABV. Ƀ - STBD SIDE OUTBD. - FR 161	AC-104				SD3800				20
	11'0" ABV. Ƀ - STBD SIDE INBD. - FR 180	AC-109								21
	10'0" ABV. Ƀ - STBD SIDE OUTBD. - FR 182	AC-109								22
	10'0" ABV. Ƀ - PORT SIDE OUTBD. - FR 182	AC-109								23
OSES)	LOWER LEVEL - STBD SIDE - FR 160	AC-100			TATE TEMCO INC. DRWG. NO. B-32056	SD3800-A				24
5, 24 & 26 AUTO. CLOSES)		AC-100								25
LOSES)	17'-5½" FLAT STBD SIDE FR 160	AC-101			TATE TEMCO INC. DRWG. NO. B-32055					26
OPENS)		AC-101								27
	LOWER LEVEL - STBD SIDE - BHD. 157	AC-115			TATE TEMCO INC. DRWG. NO. B-32058				6	28
		AC-115								29
	11'0" ABV. Ƀ - STBD OUTBD. - FR 158	AC-116			TATE TEMCO INC. DRWG. NO. 32059					30
		AC-116								31
ES) (WHEN #34 OPENS, AUTO OPENS	LOWER LEVEL - STBD SIDE - FR 157	F-100			TATE TEMCO INC. DRWG. NO. B-32056				7	32
SE; 34, 36 & 37 AUTO. CLOSES) ES)		F-100								33
ES) (WHEN OPEN, 32 AUTO. OPENS;	17'-5½" FLAT STBD. SIDE - FR 159	F-101			TATE TEMCO INC. DRWG. NO. B-32057					34
S)(WHEN #34 OPENS, AUTO. CLOSES)		F-101								35
ES)(WHEN #34 OPENS, AUTO CLOSES)		F-101								36
S)(WHEN #34 OPENS, AUTO CLOSES)		F-101								37
	6'0" ABV. Ƀ - STBD SIDE INBD. - FR 186	F-102			LUNKENHEIMER FIG. 1404	SD3800				38
	12'0" ABV. Ƀ - STBD SIDE INBD. - FR 188	F-103		BRONZE	1401-X					39
	10'0" ABV. Ƀ - STBD SIDE OUTBD. - FR 161	AC-108			R.G. LAWRENCE CO. SERIES 500 HP	SD4500-G			5	40
	10'0" ABV. Ƀ - STBD SIDE OUTBD. - FR 159	F-104		MONEL					7	41
	11'0" ABV. Ƀ - STBD SIDE INBD. - FR 188	F-104							7	42
NS, AUTO. CLOSES)(MUST BE OPEN EN)(WHEN 45 OPENS, AUTO. CLOSES)	LOWER LEVEL - STBD SIDE - FR 158	B-100		BRONZE	TATE TEMCO INC. DRWG. NO. 32049	SD3800-A			8	43
NS, AUTO. CLOSES)(MUST BE OPEN OPEN)(WHEN 45 OPENS, AUTO. CLOSES)		B-100								44
NS, AUTO. CLOSES)(MUST BE CLOSED ,46,47,48,49,50,51,52,59,60,61 & 62 AUTO. CLOSE)		B-100								45
, 43,44,45,47,49,51 & 52 AUTO. TO OPEN)(WHEN 45 OPENS AUTO CLOSES)		B-100								46
PENS, AUTO CLOSES)(MUST BE EN 45 OPENS, AUTO. CLOSES)	LOWER LEVEL PORT SIDE - FR 160	B-101			TATE TEMCO INC. DRWG. NO. 32050					47
,44,45,46,49,51 & 52 AUTO. CLOSES))(WHEN 45 OPENS, AUTO. CLOSES)		B-101								48
, AUTO. CLOSES)(MUST BE CLOSED S, AUTO. CLOSES)		B-101								49
UTO. OPENS)(MUST BE CLOSED FOR 52 OSES)(THEN CAN BE SELECTED TO OPEN)	17'-5½" FLAT PORT SIDE BHD. 157	B-102			TATE TEMCO INC. DRWG. NO. 32051					50
S, AUTO. CLOSES)(MUST BE CLOSED NS, AUTO. CLOSES)		B-102								51
ARE OPEN, AND IF 45,46,47,48 ED)(WHEN 45 OPENS, AUTO CLOSES)		B-102								52
S)	LOWER LEVEL - STBD SIDE - FR 160	B-104			TATE TEMCO INC. DRWG. NO. 32053					53
3,55,57 & 58 AUTO. CLOSES)		B-104								54
SES)		B-104								55
NS)	17'-5½" FLAT STBD SIDE - FR 160	B-103			TATE TEMCO INC. DRWG. NO. 32052					56
OSES)		B-103								57
SES)		B-103								58
4,45,46,49,51 & 52 AUTO. CLOSES) OPEN)(WHEN 45 OPENS, AUTO CLOSES)	LOWER LEVEL - PORT SIDE FR 158	B-128			TATE TEMCO INC. DRWG. NO. 32065					59
3,44,45,46,49,51 & 52 AUTO. CLOSES) EN)(WHEN 45 OPENS, AUTO. CLOSES)		B-128								60
,44,45,46,49,51 & 52 AUTO. CLOSES) PEN)(WHEN 45 OPENS, AUTO. CLOSES)		B-128								61
,44,45,46,49,51 & 52 AUTO. CLOSES) OPEN)(WHEN 45 OPENS, AUTO. CLOSES)		B-128								62
	7'-0" ABV. Ƀ - PORT SIDE INBD. - FR 186 - FR 188	B-129			TATE TEMCO INC. DRWG. NO. 32066					63
		B-129								64
		B-129								65
		B-129								66
		B-129								67
		B-129								68
	2ND DK - STBD. SIDE - FR 9	V-10		MONEL	ATWOOD & MORRILL CO. DRWG. NO. 14211-03-F	SD5400-E		M-4650-181-9		69
		V-2			ATWOOD & MORRILL CO. DRWG. NO. 14211-01-F					70

GENERAL NOTES

1. VALVES WHICH OPERATE AUTOMATICALLY WHEN ANOTHER VALVE IS OPERATED ARE ALSO CAPABLE OF BEING OPERATED INDIVIDUALLY VIA THEIR PUSHBUTTONS. HOWEVER, UNTIL THE VALVE WHOSE OPENING INITIATED THE AUTOMATIC RESPONSE OF OTHER VALVES IS CLOSED, THE OTHER VALVES WILL NOT BE OPERABLE BY MEANS OF THEIR INDIVIDUAL PUSHBUTTONS. (NOTE LAST VALVE INTERLOCKING OPERATION CONDITION FOR VALVE NO. 50 AS ONLY EXCEPTION)

△2. DEFINITION OF ACTUATOR FUNCTIONS ARE AS FOLLOWS:
   - A. REMOTE POWER = OPEN & CLOSE PUSH BUTTONS, OR AIR OPERATION, BOTH FROM A REMOTE CONTROL BOARD.
   - B. LOCAL POWER = OPEN & CLOSE PUSH BUTTONS AT VALVE OPERATOR.
   - C. LOCAL MANUAL = HAND OPERATION OF VALVE OPERATOR.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	5-26-77		1. REVISED VALVE DESCRIPTION AND ACTUATOR FUNCTION FOR ALL ITEMS TO AGREE WITH VALVES PURCHASED. 2. ADDED GENERAL NOTE NO. 2	G.L.W.	G.G.S. LTR DATED 7-12-77
2	6-6-77		1. REVISED VALVE DESCRIPTION AND MANUFS. DRWG. NO. FOR ITEM NOS. 80 THRU 86.	G.L.W.	G.G.S. LTR. DATED 7-12-77
3	7-5-77		1. REVISED SIZE FROM 5" TO 6" AND VALVE NO. FROM AC-112 TO AC-109 FOR ITEM NO. 23 2. REVISED DESCRIPTION OF ITEM NOS. 40, 41 & 42 TO INCLUDE LIMIT SWITCHES 3. ADDED MATERIAL LIST DRWG. NO. TO ITEM NO. 223 4. REVISED SERVICE IDENTIFICATION OF THE FOLLOWING ITEMS: 20, 29, 124, 151, 171, 172, 173 AND 174. 5. ADDED REMAINDER OF OPERATOR LOCATIONS.	G.L.W.	G.G.S. LTR. DATED 2-9-78
4	9-6-77		1. ADDED LOCAL POWER TO ITEM NO. 3 2. DELETED LOCAL POWER FROM ITEM NO. 19 3. REVISED SERVICE IDENTIFICATION FOR ITEM NOS. 21, 22 & 23 4. INDICATED TYPE OF OPERATOR FOR ITEM NOS. 87 THRU 124 5. REVISED DESCRIPTION OF ITEM NOS. 141 THRU 146 TO READ "AND LIMIT SWITCHES" IN LIEU OF "POSITION INDICATING LIGHTS". 6. REVISED VALVE INTERLOCKING OPERATION FOR ITEM NO. 52 7. REVISED ACTUATOR FUNCTION & VALVE INTERLOCKING OPERATION FOR ITEM NO. 223 THE ABOVE ITEMS OF THIS ALT TO AGREE WITH COMMENTS FROM G.G. SHARP LTR. NO. 5587/548-24 DATED JULY 12, 1977 8. REVISED DESCRIPTION OF ITEM NOS. 10 & 13 9. REVERSED SIZE OF ITEM NO. 61 & 62 TO AGREE WITH SERVICE INDENTIFICATION.	G.L.W.	G.G.SHARP LTR. DATED 2-9-78
5	12-19-77		1. REVISED SERVICE INDENTIFICATION AND VALVE INTERLOCKING OPERATION FOR ITEM NOS. 46 & 47 2. REVISED SERVICE INDENTIFICATION FOR ITEM NOS. 125, 126, 127, 128, 129, 130, 131, 133, 135, 136 AND 138 THE ABOVE ALT. TO AGREE WITH FINAL PIPING ARRANGEMENT.	G.L.W.	G.G.SHARP LTR DATED 2-9-78
6	5-11-78		1. ADDED COLUMN FOR CONTROL BOARD N.P. AND ADDED NAMEPLATES WHERE APPLICABLE. 2. REVISED DESCRIPTION REQ. NO. AND ADDED MANUFACTURER'S DRWG. NO. FOR VALVE NOS. 69 & 70. 3. REVISED DESCRIPTION AND ADDED MANUF. DRWG. NO. FOR ITEM NO. 151. 4. REVISED SIZE OF ITEM NOS 147, 148 & 150 FROM 1½" TO 1¼", REVISED DESCRIPTION AND ADDED MANUFACTURE'S DRWG. NO. 5. FOR VALVE NO. 46 REVISED INTERLOCKING COLUMN TO READ 47 IN LIEU OF 46. 6. FOR VALVE NO. 47 REVISED INTERLOCKING COLUMN TO READ 46 IN LIEU OF 47. 7. ADDED LOCAL POWER TO VALVE NO. 222 AS PER 23 DEPT. THE ABOVE ALT. TO AGREE WITH COMMENTS FROM G.G. SHARP LTR NO. 5587/548-8/548-10/548-24/5587 DATED FEB 9, 1978 8. DELETED LOCAL POWER FROM ACTUATOR FUNCTION FOR ITEM NO. 223.	G.L.W.	

HULL	DESIGN	CHARGE
4651	27,340 D.W.T. CONTAINERSHIP	10-8450
4650		10-8450

JOB NO. NONE

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 24 FEB. 1977
DRAWN G.L. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED J. W. Lawton
APPROVED H.G.W.

PLAN NO. M-4650-111-6
ALT. NO. 6⁸

LIST OF MOTOR AND PNEUMATIC OPERATED VALVES

NO.	PLAN NO.	TITLE
13	-56	HEELING TANKS TRANSFER SYSTEM IN MACHY. SPACE
12	-64	FUEL OIL SERVICE SYSTEM
11	-39	LOW-PRESSURE DISTILLING PLANT SYSTEM
10	-62	FUEL OIL FILLING & TRANSFER SYSTEM
9	-61	DIESEL OIL FILLING TRANSFER & SERVICE SYSTEM
8	-54	BILGE & CLEAN BALLAST SYSTEMS
7	-50	FIREMAIN SYSTEM
6	-48	CARGO TANK S.W. F.W. WASHING SYSTEM
5	-46	SALT WATER SERVICE SYSTEM
4	-45	MAIN SALT WATER CIRCULATING SYSTEM
3	-23	CONDENSATE & DRAIN TRANSFER SYSTEM
2	-17	SAFETY & RELIEF VALVE ESCAPE SYSTEM
1	M-4650-111-20-13	EXTRACTION & EXHAUST STEAM SYSTEM

REFERENCE PLANS

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-12-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

		4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
		DATE OF ISSUE			
	ALTERATION	1	4	5	6
	ENGINEERING DISTRIBUTION	5-26-77	9-7-77	12-19-77	6-14-78
MAIL	OWNERS	5		6	6
	AMERICAN BUREAU				
	LLOYD'S R.S.				
	U.S.M.A.				
	U.S NAVY				
	U.S.C.G.				
	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.		1	1	1
	AM. BU. INSP.				
	LLOYD'S INSP.				
	U.S.M.A. INSP.		1	1	1
	U.S. NAVY INSP.				
	U.S.C.G. INSP.				
OFFICE	HULL DRAFT.-21	1	1	1	1
	MACH. DRAFT.-22	2	2	2	2
	ELEC. DRAFT.-23	1	1	1	1
	OUTFIT. DRAFT.-25				
	ESTIMATING				
	DAUGHERTY - CTD	1	1	1	1
MISC.	PRODUCTION (BCD)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	WILLIAMS - PLANNING	2			
	TOTAL ENG'R. DIST.	12	7	13	13
	YARD DISTRIBUTION	9-8-77	12-19-77	6-15-78	
YARD	[illegible]	1	1	1	
	SHIP SUPT.	1	1	1	
	PIECE RATE-11	1	1	1	
	TEST DEPARTMENT				
	QUALITY ASSURANCE	1	1	1	
	PLANNING	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	
	35 DEPT.	2	2	2	
	P. MCNAIR	1	1	1	
	H. LEVY	1	1	1	
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.	2	2	2	
	OPTICAL DETAIL-40	2	2	2	
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP-52	6	6	6	
	OUTFIT. #1 PIER	1	1	1	
	PIPE DRAFT.-52	2	2	2	
	BOILER SHOP-58	1	1	1	
	OUTSIDE MACH.-60	1	1	3	
	Q-MAT'L	1	1	1	
	ELECTRIC SHOP-70				
	SHEET MET. SHOP-74				
	COPPER SHOP-51				
	PAINT SHOP-75	1	1	1	
OTHER	WELDING				
	Q-MATERIAL		1	1	
	MOLD LOFT-41	1	1	1	
	BRACKET SHOP				
	TOTAL YARD DIST.	25	30	32	

4650-51-ALT. 4
4650-51-ALT. 5
4650-51-ALT. 6

1

M-558

90 FT.

M-4650-111-6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

8X

BUILDERS PLAN NO. M-4650-111-6

FRAME 1 OF 5

ATION	OPERATOR LOCATION △3	MATERIAL DRWG. VALVE NO.	BODY MATERIAL	TRIM MATERIAL	MANUFACTURE'S DRWG. NO./FIG. NO.	REQN. NO.	FLUID MEDIUM	MATERIAL LIST DRAWING NO.	PIPING DIAG. REF. NO.	VALVE NO.
	14'-0" ABV. ℄ PORT SIDE-INBD.-FR 158	B-106	BRONZE	BRONZE	LUNKENHEIMER FIG.#1404	503800	SALT WATER	M-4650-372-02-5	8	71
	11'-0" ABV. ℄ PORT SIDE OUTBD.-FR. 163	B-107			FIG.#1400-X					72
	8'-0" ABV. ℄ - PORT SIDE INBD-FR. 195	B-108			FIG.#1404					73
	7'-0" ABV. ℄ - PORT SIDE INBD.-FR. 198	B-108			FIG.#1404					74
	19'-0" ABV. ℄ - STBD. SIDE OUTBD - BHD 157	B-111			FIG.#1404					75
	17'-0" ABV. ℄ - PORT SIDE OUTBD.-BHD 157	B-111			FIG.#1404					76
	18'-0" ABV. ℄ - PORT SIDE OUTBD-BHD 157	B-111			FIG.#1404					77
	18'-0" ABV. ℄ - STBD. SIDE OUTBD-BHD 157	B-111			FIG.#1404					78
	12'-0" ABV. ℄ - PORT SIDE INBD.-BHD 184	B-112			FIG.#1400X					79
	11'-0" ABV. ℄ - PORT SIDE OUTBD-FR 159	B-113		MONEL	JAMESBURY STYLE D150F-14-71-TT W/F405 ACT	504500-E			13	80
	11'-0" ABV. ℄ - PORT SIDE OUTBD.-FR. 160	B-113								81
	16'-0" ABV. ℄ - PORT SIDE OUTBD.-FR 158	B-113								82
	11'-0" ABV. ℄ - PORT SIDE OUTBD.-BHD 157	B-116			JAMESBURY STYLE D150F-14-71-TT W/E405 ACT					83
	11'-0" ABV. ℄ - PORT SIDE OUTBD-BHD 157	B-116								84
	13'-0" ABV. ℄ - PORT SIDE OUTBD.-FR. 159	B-131			JAMESBURY STYLE A150F-14-71-TT W/C305 ACT					85
	12'-0" ABV. ℄ PORT SIDE OUTBD.-FR. 162	B-131								86
	TANK TOP - PORT SIDE BET. 156-157	V-5		BRONZE	DEMCO INC. TYPE NE-LUG SERIES	503800-C		M-4650-181-9	8	87
		V-5								88
		V-5								89
		V-5								90
		V-5								91
		V-5								92
		V-5								93
		V-5								94
	TANK TOP - STBD. SIDE BET. FR. 156-157	V-5								95
		V-5								96
		V-5								97
		V-5								98
		V-5								99
		V-5								100
		V-5								101
	TANK TOP PORT SIDE-BET. FR 92-93	V-5								102
		V-5								103
		V-5								104
		V-5								105
		V-5								106
		V-5								107
		V-5								108
		V-5								109
	TANK TOP - STBD. SIDE-BET. FR. 92-93	V-5								110
		V-5								111
		V-5								112
		V-5								113
		V-5								114
		V-5								115
		V-5								116
		V-5								117
	TANK TOP - STBD SIDE-BET. FR. 76-77	V-5								118
		V-5								119
		V-5								120
	TANK TOP. - PORT SIDE BET. FR. 60-61	V-5								121
	TANK TOP - STBD. SIDE BET. FR. 60-61	V-5								122
		V-5								123
		V-12								124
	TANK TOP - PORT SIDE-BET. FR. 92-93	V-7			TATE TEMCO INC. DRWG. NO. 32063	503800-A				125
		V-7								126
		V-7								127
	TANK TOP. - STBD. SIDE-BET. FR. 92-93	V-7								128
		V-7								129
		V-7								130
	TANK TOP - PORT SIDE BET. FR. 92-93	V-13			TATE TEMCO INC. DRWG. NO. 32064					131
		V-13								132
		V-13								133
		V-13								134
	TANK TOP - STBD. SIDE BET. FR. 92-93	V-13								135
		V-13								136
		V-13								137
		V-13								138
	TANK TOP - PORT SIDE BET. FR. 156-157	V-6			TATE TEMCO INC. DRWG. NO. 32064					139
		V-6								140

LIST OF MOTOR AND PNEUMATIC OPERATED VALVES

	CONTROL BOARD N.P. No. △6	VALVE NO.	QTY.	SERVICE IDENTIFICATION	DESCRIPTION △	ACTUATOR FUNCTION △ (SEE GEN. NOTE NO. 2)	VALVE INTERLOCKING OPERATION	OPERATOR LOCATION △3	MATERIAL DRWG. VALVE NO.	BODY MATERIAL	TRIM MATERIAL
		1	1	EXTRACTION STEAM TO 4TH STAGE FEED HEATER	4",300# FLGD., GLOBE STOP CHECK, F.&D.; ELECTRIC MOTOR OPERATED COMPLETE WITH MECHANICAL POSITION INDICATOR	OPEN-CLOSE, REMOTE POWER, AND LOCAL MANUAL	(SEE CENTRALIZED CONTROL SYSTEM — MANEUVERING)	20'0" ABL - STBD SIDE - FR 170	E-117	CHROME MOLY	STAINLESS STEEL
		2	1	EXTRACTION STEAM TO 3RD STAGE FEED HEATER	5",		(SEE CENTRALIZED CONTROL SYSTEM — MANEUVERING)	20'0" ABL - STBD. SIDE - FR 168	E-116	CAST STEEL	
△4		3	1	TURBO GEN. EXHAUST TO MAIN CONDENSER	36",50# FLGD., GATE VALVE, S.W.D., O.S.&Y. RISING STEM, F.&D.; ELECTRIC MOTOR OPERATED COMPLETE WITH MECHANICAL POSITION INDICATOR	OPEN-CLOSE, REMOTE POWER, LOCAL POWER, AND LOCAL MANUAL		22'-10" ABL - PORT SIDE - FR 167	E-100		BRONZE
		4	1	PORT BOILER BOTTOM BLOW	1½",1500# FLGD., STRAIGHTWAY BLOW-OFF VALVE, F.&D.; ELECTRIC MOTOR OPERATED COMPLETE WITH MECHANICAL POSITION INDICATOR	OPEN-CLOSE REMOTE POWER AND LOCAL MANUAL		26'-0" FLAT - PORT SIDE - FR. 179	W-138	FORGED STEEL	STAINLESS STEEL
		5	1	SURFACE				26'-0" FLAT STBD. SIDE - FR. 179	W-138		
		6	1	STBD. BOTTOM				48'-0" ABL - PORT SIDE - FR. 175	W-138		
		7	1	SURFACE				48'-0" ABL - STBD. SIDE - FR. 175	W-138		
		8	1	FEED WATER MAKE-UP	3",150# FLGD., GLOBE VALVE, F.&D.; ELECTRIC MOTOR OPERATED COMPLETE WITH MECHANICAL POSITION INDICATOR			18'-0" ABL - STBD SIDE - FR 166	AW-111	CAST STEEL	BRONZE
		9	1	FEED WATER DUMP				18'-0" ABL - STBD. SIDE - FR. 164	AW-111		
△4		10	1	MAIN CIRC. WATER LOW OVERBOARD DISCHARGE	42",150# FLGD., GATE VALVE, O.S.&Y. RISING STEM, F.&D.; ELECTRIC MOTOR OPERATED WITH MECHANICAL POSITION INDICATOR	OPEN-CLOSE, REMOTE POWER, LOCAL POWER, AND LOCAL MANUAL	THIS VALVE OR VALVE NO. 13 MUST BE OPEN FOR MAIN CIRC. PUMP TO BE STARTED.	11'-6" ABL - PORT SIDE - FR 168	C-100	FABRICATED STEEL	MONEL
		11	1	INLET SCOOP	38",150#			8'-0" ABL - STBD. SIDE - FR. 161	C-101		
		12	1	MAIN CIRCULATING PUMP SUCTION	30",150#		(SEE CENTRALIZED CONTROL SYSTEM — MANEUVERING)	9'-9" ABL - STBD. SIDE - FR. 164	C-104		
△4		13	1	MAIN CIRC. WATER HIGH OVBD. DISCH.	10",150#		THIS VALVE OR VALVE NO. 10 MUST BE OPEN FOR MAIN CIRC. PUMP TO BE STARTED.	21'-0" ABL - PORT SIDE - FR. 168	C-105	BRONZE	
		14	1	MAIN LUBE OIL COOLER CIRC. WATER OVBD DISCH.	8",150#			17'-0" ABL - STBD. SIDE - FR. 166	C-109		
	504	15	1	HIGH SEA SUCTION - AUXILIARY SERVICES	10",150# FLGD., GATE VALVE, O.S.&Y. RISING STEM, F.&D.; AIR MOTOR OPERATOR WITH POSITION INDICATING LIGHTS			6'-0" ABV. ℄ - STBD. SIDE OUTBD. - FR. 163	AC-102		
	503	16	1	LOW	10",150#			6'-0" ABV. ℄ - PORT SIDE INBD. - FR 160	AC-102		
		17	1	HIGH CAPACITY S.W. SERVICE PUMP SUCTION	10",150#			7'-0" ABV. ℄ - STBD. SIDE OUTBD. - FR. 160	AC-102		
		18	1	DISCHARGE	10",150#			14'-0" ABV. ℄ - STBD. SIDE OUTBD. - FR. 161	AC-102		
△4	513	19	1	EMERGENCY SUPPLY TO SALT WATER SERVICE SYSTEM FROM FIREMAIN	4" 150 FLGD GATE VALVE O.S.&Y. RISING STEM F.&D. ELECTRIC MOTOR OPERATED WITH MECHANICAL POSITION INDICATOR	OPEN-CLOSE, REMOTE POWER AND LOCAL MANUAL		19'-6" ABL - STBD. SIDE - FR 159	AC-106		
△3	510	20	1	SALT WATER OVBD. DISCH. AT SHELL	8",150# FLGD., GLOBE STOP CHECK, F.&D.; O.S.&Y. RISING STEM, AIR MOTOR OPERATED AND POSITION INDICATING LIGHTS	OPEN-CLOSE REMOTE POWER LOCAL POWER AND LOCAL MANUAL		16'-0" ABV. ℄ - STBD. SIDE OUTBD. - FR 161	AC-104		
△4		21	1	SHIPS SERVICE DIESEL GEN. CIRC. PUMP LOW SEA SUCTION	6",150# FLGD., S.W.D., GATE VALVE, F.&D.; O.S.&Y. RISING STEM, WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS			11'-0" ABV. ℄ - STBD SIDE INBD. - FR. 180	AC-109		
△4		22	1	HIGH				10'-0" ABV. ℄ - STBD. SIDE OUTBD. - FR 182	AC-109		
△4 △3		23	1	OVBD. DISCH.				10'-0" ABV. ℄ - PORT SIDE OUTBD. - FR 182	AC-109		
	502	24	1	LOW CAPACITY S.W. SERVICE PUMP SEA SUCTION	8",150# FLGD, 2 VALVE STOP CHECK, SIMPLEX MANIFOLD, F.&D.; EACH VALVE TO BE COMPLETE WITH AIR MOTOR OPERATOR AND LIMIT SWITCHES.		(WHEN #25 OPENS, AUTO. CLOSES)	LOWER LEVEL - STBD SIDE - FR. 160	AC-100		
	226	25	1	SUCTION FROM BILGE SYSTEM	8",150# FLGD,		(WHEN OPEN, #27 AUTO. OPENS; #24 & 26 AUTO. CLOSES)		AC-100		
	512	26	1	DISCH. TO S.W. SERVICE SYSTEM	8",150# FLGD,		(WHEN #25 OPENS, AUTO. CLOSES)	17'-5½" FLAT STBD SIDE FR 160	AC-101		
	511	27	1	OVBD. DISCH. AT MANIFOLD	8",150# FLGD.,		(WHEN #25 OPENS, AUTO. OPENS)		AC-101		
	516	28	1	TANK CLEANING PUMP SEA SUCTION	3½",150# FLGD.,			LOWER LEVEL - STBD SIDE - BHD. 157	AC-115		
△3	515	29	1	TANK CLEANING PUMP CARGO TANK RECIRC.	3½",150# FLGD.,				AC-115		
	517	30	1	OVBD. DISCH.	2½",300# FLGD.,			11'-0" ABV. ℄ - STBD. OUTBD. - FR. 158	AC-116		
	518	31	1	DISCH. TO TANK CLEANING HEATER/DRAIN COOLER	2½",300# FLGD.,				AC-116		
	401	32	1	FIRE & TANK WASHING PUMP SEA SUCTION	8",150# FLGD.,		(WHEN #33 OPENS, AUTO. CLOSES) (WHEN #34 OPENS, AUTO OPE	LOWER LEVEL - STBD SIDE - FR 157	F-100		
	225	33	1	EMERGENCY BILGE SUCTION	8",150# FLGD.,		(WHEN OPEN #35 AUTO. OPENS (32, 34, 36 & 37 AUTO. CLOSES) (WHEN #34 OPENS, AUTO. CLOSES)		F-100		
	402	34	1	DISCH. TO FIRE MAIN	8",150# FLGD., 4 VALVE STOP-CHECK, SIMPLEX MANIFOLD, F.&D.; EACH VALVE TO BE COMPLETE WITH AIR MOTOR OPERATOR AND LIMIT SWITCHES		(WHEN #33 OPENS, AUTO. CLOSES) (WHEN OPEN, #32 AUTO. OPENS, 33, 35, 36 & 37 AUTO. CLOSES)	17'-5½" FLAT STBD. SIDE - FR 159	F-101		
	507	35	1	OVBD. DISCH.	5",150# FLGD.,		(WHEN #33 OPENS, AUTO. OPENS) (WHEN #34 OPENS, AUTO. CLOSES)		F-101		
	508	36	1	DISCH. TO CARGO TANK CLEANING SYSTEM	4",150# FLGD.,		(WHEN #33 OPENS, AUTO CLOSES) (WHEN #34 OPENS, AUTO CLOSES)		F-101		
	509	37	1	DISCH. FOR EMERG. SUPPLY TO S.W. SERVICE SYS.	4",150# FLGD.,		(WHEN #33 OPENS, AUTO CLOSES) (WHEN #34 OPENS, AUTO CLOSES)		F-101		
	405	38	1	FIRE PUMP SEA SUCTION	8",150# FLGD., S.W.D. GATE VALVE, F.&D.; O.S.&Y. RISING STEM, COMPLETE WITH AIR MOTOR & POSITION INDICATING LIGHTS			6'-0" ABV. ℄ - STBD SIDE INBD. - FR. 186	F-102		
	403	39	1	FIRE PUMP DISCH.	8",150# FLGD., ANGLE STOP CHECK VALVE F.&D. O.S.&Y. RISING STEM COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS			12'-0" ABV. ℄ - STBD. SIDE INBD - FR. 188	F-103		BRONZE
△3		40	1	HIGH CAPACITY S.W. SERVICE PUMP RECIRC.	1",150# FLGD., F.&D. 2 WAY DIRECT OPERATED ROTARY SHAFT TYPE SOLENOID VALVES WITH LIMIT SWITCHES NORMALLY OPEN ENERGIZED TO CLOSE.	OPEN-CLOSE, REMOTE POWER, AND LOCAL MANUAL		10'-0" ABV. ℄ - STBD. SIDE OUTBD. - FR. 161	AC-108		
△3	501	41	1	FIRE & TANK WASHING PUMP RECIRC.	1",150# FLGD.,			10'-0" ABV. ℄ - STBD. SIDE OUTBD. - FR. 159	F-104		MONEL
△3	404	42	1	FIRE PUMP RECIRC.	1",150# FLGD.,			11'-0" ABV. ℄ - STBD. SIDE INBD. - FR 188	F-104		
	602	43	1	BILGE PUMP SUCTION FROM PORT STABILIZER DUMP TANK	6",150# FLGD, 4 VALVE STOP CHECK, SIMPLEX MANIFOLD, F.&D.; EACH VALVE TO BE COMPLETE WITH AIR MOTOR OPERATOR AND LIMIT SWITCHES	OPEN-CLOSE, REMOTE POWER, LOCAL POWER, AND LOCAL MANUAL	(WHEN 41, 48, 59, 60, 61 OR 62 OPENS, AUTO. CLOSES) (MUST BE OPEN IF 44 IS NOT OPEN FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)	LOWER LEVEL - STBD SIDE - FR. 158	B-100		BRONZE
	601	44	1	STBD.	6",150# FLGD.,		(WHEN 47, 48, 59, 60, 61 OR 62 OPENS, AUTO. CLOSES) (MUST BE OPEN IF 43 IS NOT OPEN FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)		B-100		
	234	45	1	BILGE PUMP STRIPPING SUCTION FROM F.O. SERVICE TANKS	3",150# FLGD.,		(WHEN 47, 48, 59, 60, 61 OR 62 OPENS, AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN OPEN 43, 44, 46, 47, 48, 49, 50, 51, 52, 59, 60, 61 & 62 AUTO. CLOSE)		B-100		
△6 △5	232	46	1	INDEPENDENT BILGE SUCTION	8",150# FLGD,		WHEN OPEN, 50 AUTO. OPENS, 43, 44, 45, 47, 49, 51 & 52 AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS AUTO CLOSES)		B-100		
△6 △5	506	47	1	BILGE PUMP SEA SUCTION	8",150# FLGD., 3 VALVE STOP CHECK, SIMPLEX MANIFOLD, F.&D.; EACH VALVE TO BE COMPLETE WITH AIR MOTOR OPERATOR AND LIMIT SWITCHES		(WHEN 46, 48, 59, 60, 61 OR 62 OPENS, AUTO CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)	LOWER LEVEL PORT SIDE - FR. 160	B-101		
	233	48	1	BILGE PUMP SUCTION FROM BILGE MAIN	8",150# FLGD,		(WHEN OPEN, 50 AUTO OPENS; 43, 44, 45, 46, 49, 51 & 52 AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)		B-101		
	342	49	1	BILGE PUMP SUCTION FROM CLEAN BALLAST SYSTEM	8",150# FLGD.,		(WHEN 41, 48, 59, 60, 61 OR 62 OPENS, AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)		B-101		
	235	50	1	BILGE PUMP OVBD. DISCHARGE-AT MANIFOLD	8",150# FLGD,		(WHEN 47, 48, 59, 60, 61 OR 62 OPENS, AUTO. OPENS) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES) (THEN CAN BE SELECTED TO OPEN)	17'-5½" FLAT PORT SIDE BHD. 157	B-102		
	345	51	1	BILGE PUMP DISCHARGE TO CLEAN BALLAST SYSTEM	8",150# FLGD,		(WHEN 47, 48, 59, 60, 61 OR 62 OPENS, AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)		B-102		
△4	603	52	1	UPPER & LOWER STABILIZER TANKS	6",150# FLGD.,		(CAN OPEN IF 43 OR 44 OR BOTH ARE OPEN, AND IF 45, 46, 47, 48, 49, 50, 51, 59, 60 & 61 ARE CLOSED) (WHEN 45 OPENS, AUTO CLOSES)		B-102		
	505	53	1	BILGE, BALLAST & S.W. SERVICE PUMP SEA SUCTION	8",150# FLGD.,		(WHEN 54 OPENS, AUTO. CLOSES)	LOWER LEVEL - STBD SIDE - FR. 160	B-104		
	227	54	1	SUCTION FROM BILGE MAIN	8",150# FLGD,		(WHEN OPEN 56 AUTO. OPENS; 53, 55, 57 & 58 AUTO. CLOSES)		B-104		
	341	55	1	CLEAN BALLAST MAIN	8",150# FLGD.,		(WHEN 54 OPENS, AUTO. CLOSES)		B-104		
	343	56	1	OVBD. DISCH.-AT MANIFOLD	8",150# FLGD,		(WHEN 54 OPENS, AUTO. OPENS)	17'-5½" FLAT STBD SIDE - FR. 160	B-103		
	344	57	1	DISCHARGE TO CLEAN BALLAST MAIN	8",150# FLGD,		(WHEN 54 OPENS, AUTO. CLOSES)		B-103		
	514	58	1	S.W. SERVICE SYSTEM	8",150# FLGD,		(WHEN 54 OPENS, AUTO. CLOSES)		B-103		
	228	59	1	BILGE PUMP SUCTION FROM CONDENSATE DRAIN WELL	2",150# FLGD., 4 VALVE STOP-CHECK SIMPLEX MANIFOLD, F.&D.; EACH VALVE OF MANIFOLD COMPLETE WITH AIR MOTOR OPERATOR AND LIMIT SWITCHES		(WHEN OPEN, 50 AUTO. OPENS; 43, 44, 45, 46, 49, 51 & 52 AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO CLOSES)	LOWER LEVEL - PORT SIDE - FR. 158	B-128		
	231	60	1	PORT FWD DRAIN WELL (MACHY. SPACE)	4",150# FLGD,		(WHEN OPEN, 50 AUTO. OPENS; 43, 44, 45, 46, 49, 51 & 52 AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)		B-128		
△4	229	61	1	PIPE TUNNEL	3",150# FLGD,		(WHEN OPEN, 50 AUTO. OPENS; 43, 44, 45, 46, 49, 51 & 52 AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)		B-128		
△4	230	62	1	STBD FWD. DRAINWELL (MACHY. SPACE)	4",150# FLGD,		(WHEN OPEN, 50 AUTO. OPENS; 43, 44, 45, 46, 49, 51 & 52 AUTO. CLOSES) (MUST BE CLOSED FOR 52 TO OPEN) (WHEN 45 OPENS, AUTO. CLOSES)		B-128		
	242	63	1	AFT DRAIN WELL (MACHY. SPACE)	4",150# FLGD., 6 VALVE STOP-CHECK SIMPLEX MANIFOLD F.&D. EACH VALVE TO BE COMPLETE WITH AIR MOTOR OPERATOR AND LIMIT SWITCHES			7'-0" ABV. ℄ - PORT SIDE INBD. - FR. 186 - FR. 188	B-129		
	241	64	1	SHAFT ALLEY DRAIN WELL	4",150# FLGD,				B-129		
	240	65	1	NO. 9 CARGO HOLD DRAIN WELL (20'-0" FLAT)	4",150# FLGD,				B-129		
	239	66	1	CARGO OIL TANK NO 3 COFFERDAM	2",150# FLGD,				B-129		
	238	67	1	STORES AREA ON 38'-0" FLAT	2",150# FLGD,				B-129		
	237	68	1	SHAFT ALLEY ESCAPE & CARGO TANK SPACE (20'-0" F	3",150# FLGD,				B-129		
△6	302	69	1	FORE PEAK BALLAST SUCTION/FILL - AT BULKHEAD	6",150# FLGD., AIR OPERATED GLOBE STOP CHECK VALVE; SPRING-CLOSED, AIR-TO-OPEN	OPEN-CLOSE, REMOTE POWER, AND LOCAL POWER		2ND DK. - STBD. SIDE - FR. 9	V-10	MONEL	AT DR
△6	201	70	1	THRUSTER ROOM BILGE SUCTION - AT BULKHEAD	2",150# FLGD,				V-2		AT DR

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

8X

BUILDERS PLAN NO. M-4650-111-6

FRAME 2 OF 5

	OPERATOR LOCATION △3	MATERIAL DRWG VALVE NO.	BODY MATERIAL	TRIM MATERIAL	MANUFACTUR'S DRWG. NO FIG. NO.	REQN. NO.	FLUID MEDIUM	MATERIAL LIST DRWG. NO.	PIPING DIAG. REF. NO.	VALVE NO.
	TANK TOP-PORT SIDE BET. FR.156-157	V-6	BRONZE	BRONZE	TATE TEMCO INC. DRWG. NO. 32064	503800-A	SALT WATER	M-4650-181-9	8	141
		V-6								142
	TANK TOP-STBD. SIDE BET. FR.156-157	V-6			TATE TEMCO INC. DRWG. NO. 32064					143
		V-6								144
		V-6								145
		V-6								146
	32'0" ABV. ℄-PORT SIDE OUTBD.-FR.178	DO-103	FORGED STEEL	STAINLESS STEEL	ACF INDUSTRIES DRWG. NO. RS-267632	502800-D	DIESEL OIL	M-4650-181-07-1	9	147
		DO-103								148
										149
	25'0" ABV. ℄-PORT SIDE OUTBD.-FR.179	DO-104	FORGED STEEL	STAINLESS STEEL	ACF INDUSTRIES DRWG. NO. RS-267632	502800-D	DIESEL OIL	M-4650-181-07-1	9	150
	32'0" ABV. ℄-PORT SIDE OUTBD. FR.178	DO-105			ACF INDUSTRIES DRWG. NO. RS-267633					151
										152
	6'0" ABV. ℄-PORT, SIDE INBD.-FR. 176	DO-121	CAST STEEL	BRONZE-STELLITE-S.S.	LUNKENHEIMER FIG. NO. 1512-B	503800				153
	6'0" ABV.℄-STBD SIDE INBD-FR 176	DO-121								154
	2ND DK. PASS.-PORT BET. FR 116-117	V-1						M-4650-181-07-10		155
	STBD.	V-1								156
	13'0" ABV. ℄-PORT SIDE INBD.-BHD.157	FO-101					FUEL OIL	M-4650-181-07-1	10	157
	15'0" ABV. ℄-PORT SIDE OUTBD.-BHD.157	FO-101								158
LLY	2ND DK. PASS.-PORT BET. FR 151-152	V-1	CAST STEEL NOD. IRON	BRONZE	DEMCO INC.: NE-LUG SERIES	503800-C		M-4650-181-07-8		159
SA VERSA	2ND DK. PASS.-PORT BET FR. 150-151	V-1								160
	2ND DK. PASS.-STBD. BET. FR. 151-152	V-1								161
A VERSA	2ND DK. PASS.-STBD. BET. FR 150-151	V-1								162
	LOWER LEVEL-PORT SIDE - FR. 161	FO-114	CAST STEEL	BRONZE	TATE TEMCO INC. DRWG. NO. 32061	503800-A		M-4650-181-07-1		163
		FO-114								164
	LOWER LEVEL-PORT SIDE - FR. 162	FO-115			TATE TEMCO INC. DRWG. NO. 32062					165
		FO-115								166
	LOWER LEVEL-PORT SIDE-BHD. 157	FO-113			TATE TEMCO INC. DRWG. NO. 32060					167
		FO-113								168
		FO-113								169
		FO-113								170
	TANK TOP-PORT BET. FR. 153-154	V-2	CAST STEEL	BRONZE STELLITE-S.S.	LUNKENHEIMER FIG. NO. 1512-B	503800		M-4650-181-07-4		171
	31'4" FLAT PORT BET 156-157	V-2								172
	TANK TOP STBD BET. FR. 153-154	V-2								173
	31'4" FLAT-STBD. BET. FR 157-158	V-2								174
	TANK TOP-PORT BET FR 141-142	V-3								175
	-STBD	V-3								176
	2ND DK. PASS-PORT BET. FR. 133&134	V-1								177
	-STBD.	V-1								178
	2ND DK. PASS-PORT BET FR 130-131	V-1								179
	STBD.	V-1								180
	2ND DK. PASS-PORT BET. FR 125-126	V-1								181
	-STBD.	V-1								182
	2ND DK. PASS.-PORT BET. FR. 114.3-114.4	V-1						M-4650-181-07-6		183
	-STBD.	V-1								184
	2ND DK. PASS.-PORT BET. FR. 114.2-114.3	V-1								185
	-STBD.	V-1								186
	2ND DK. PASS.-PORT BET. FR. 109-110	V-1								187
	-STBD.	V-1								188
	2ND DK. PASS-PORT BET. FRS. 101-102	V-2						M-4650-181-07-5		189
	-STBD.	V-2								190
	TANK TOP-PORT BET. FRS. 92-93	V-1								191
	-STBD	V-1								192
	-PORT	V-1								193
	-STBD	V-1								194
	TANK TOP-PORT BET. FR. 76-77	V-1						M-4650-181-07-7		195
	-STBD.	V-1								196
	-PORT	V-1								197
	-STBD.	V-1								198
	TANK TOP-PORT BET. FR. 60-61	V-1								199
	-STBD.	V-1								200
	-PORT	V-1								201
	-STBD.	V-1								202
	TANK TOP-STBD. BET. FR. 36-37	V-1								203
	-STBD.	V-1								204
	29'8" FLAT-PORT BET. FR. 26-27	V-1								205
	-STBD.	V-1								206
	6'0" ABV. ℄-PORT SIDE INBD.-FR. 161	AC-112	BRONZE	MONEL	LUNKENHEIMER FIG. NO. 1404	503800	SALT WATER	M-4650-372-02-5	11	207
	2ND DK. PASSAGE WAY PORT SIDE FR. 114.28	V-3		BRONZE				M-4650-181-9	8	208
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	2ND DK. PASSAGE WAY STBD. SIDE FR. 114.28	V-3								210

LIST OF MOTOR AND PNEUMATIC OPERATED VALVES

CONTROL BOARD N.P. No. △6	VALVE NO.	QTY.	SERVICE IDENTIFICATION	DESCRIPTION △1	ACTUATOR FUNCTION (SEE GEN. NOTE NO.2) △1	VALVE INTERLOCKING OPERATION	OPERATOR LOCATION △3	MATERIAL DRWG. VALVE NO.	BODY MATERIAL	TRIM MATERIAL	MANUFAC DRWG.
346	71	1	COMBINED BILGE, BALLAST & S.W. SERVICE PUMP AND BILGE PUMP DISCHARGE TO CLEAN BALLAST MAIN	8"150" FLGD., S.W.D., GATE VALVE, F.&D., O.S.&Y. RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS	OPEN-CLOSE, REMOTE POWER, LOCAL POWER, AND LOCAL MANUAL		14'0" ABV. ℄ PORT SIDE INBD.-FR 158	B-106	BRONZE	BRONZE	LUNKENHE
347	72	1	BILGE SYSTEM OVBD. DISCHARGE - AT SHELL	8"150" FLGD., GLOBE-STOP CHECK VALVE, F.&D., O.S.&Y. RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS			11'0" ABV. ℄ PORT SIDE OUTBD.-FR. 163	B-107			
348	73	1	BALLAST DEEP TANK NO. 17 CLEAN BALLAST MAIN SUCTION/FILL	6"150" FLGD., S.W.D., GATE VALVE, F.&D., O.S.&Y. RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS			8'0" ABV. ℄-PORT SIDE INBD-FR 195	B-108			
349	74	1	AFT PEAK TANK CLEAN BALLAST MAIN SUCTION/FILL	6"150" FLGD.			7'0" ABV ℄-PORT SIDE INBD.-FR.198	B-108			
604	75	1	UPPER STABILIZER TANK DUMP - STBD.	12"150" FLGD.			19'0" ABV. ℄-STBD SIDE OUTBD.-BHD 157	B-111			
607	76	1	- PORT	12"150" FLGD.			19'0" ABV. ℄-PORT SIDE OUTBD.-BHD 157	B-111			
606	77	1	LOWER - PORT	12"150" FLGD.			18'0" ABV. ℄-PORT SIDE OUTBD-BHD.157	B-111			
605	78	1	-STBD.	12"150" FLGD.			18'0" ABV. ℄-STBD. SIDE OUTBD-BHD.157	B-111			
236	79	1	MACHY. SPACE BILGE PUMP DISCHARGE (AUTO. OPERATION & REMOTE SHUTOF	2½"150" FLGD. GLOBE-STOP CHECK VALVE F.&D. O.S.&Y. RISING STEM COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS			12'0" ABV. ℄-PORT SIDE INBD.-BHD 184	B-112			
	80	1	HEELING TRIM TRANSFER PUMP SUCTION FROM STBD. TANK	8",150" FLGD., BALL VALVE, F.&D., WITH PNEUMATIC SPRING-DIAPHRAGM ACTUATORS (AIR TO OPEN-SPRING TO CLOSE) AND MANUAL OVERRIDE	OPEN-CLOSE, REMOTE POWER, AND LOCAL MANUAL		11'0" ABV. ℄-PORT SIDE OUTBD-FR 159	B-113		MONEL	JAMESB D150F-14-
	81	1	PORT TANK	8",150"			11'0" ABV. ℄-PORT SIDE OUTBD.-FR. 160	B-113			
	82	1	PORT & STBD HEELING TANKS FILL FROM S.W. SERVICE SYSTEM	8",150"			16'0" ABV. ℄-PORT SIDE OUTBD.-FR 158	B-113			
	83	1	HEELING TRIM TRANSFER PUMP DISCHARGE TO STBD. TANK	6",150"			11'0" ABV. ℄-PORT SIDE OUTBD.-BHD. 157	B-116			JAMESB D150F-14-T
	84	1	PORT TANK	6",150"			11'0" ABV. ℄-PORT SIDE OUTBD-BHD157	B-116			
	85	1	COOLING WATER SUPPLY	2",150", FLGD., BALL VALVE F.&D., WITH PNEUMATIC SPING-DIAPHRAGM ACTUATORS (SPRING TO OPEN-AIR TO CLOSE) AND MANUAL OVERRIDE			13'0" ABV. ℄-PORT SIDE OUTBD.-FR.159	B-131			JAMESB A150F-14-T
	86	1	DISCHARGE	2",150"			12'0" ABV. ℄-PORT SIDE OUTBD.-FR. 162	B-131			
332	87	1	NO.6 DOUBLE BOTTOM BALLAST TANK SUCTION/FILL - PORT OUTBD.	5",150", LUG TYPE, BUTTERFLY VALVE, WITH AIR CYLINDER OPERATOR AND POSITION INDICATING LIGHTS	OPEN-CLOSE, REMOTE POWER, LOCAL POWER & LOCAL MANUAL		TANK TOP-PORT SIDE BET. 156-157	V-5		BRONZE	DEMCO TYPE NE
328	88	1	NO.5C	5",150"				V-5			
336	89	1	NO.7	5",150"				V-5			
326	90	1	NO.5C INBD.	5",150"				V-5			
338	91	1	NO.8	5",150"				V-5			
337	92	1	NO.8 -CENTERLINE	5",150"				V-5			
334	93	1	NO.7 -PORT INBD.	5",150"				V-5			
330	94	1	NO.6	5",150"				V-5			
329	95	1	NO.6 -STBD.	5",150"			TANK TOP-STBD. SIDE BET. FR.156-157	V-5			
333	96	1	NO.7	5",150"				V-5			
325	97	1	NO.5C	5",150"				V-5			
327	98	1	NO.5C OUTBD.	5",150"				V-5			
339	99	1	NO.8	5",150"				V-5			
335	100	1	NO.7 OUTBD.	5",150"				V-5			
331	101	1	NO.6	5",150"				V-5			
312	102	1	NO.4 -PORT	5",150"			TANK TOP PORT SIDE-BET. FR 92-93	V-5			
316	103	1	NO.5	5",150"				V-5			
320	104	1	NO.5A	5",150"				V-5			
324	105	1	NO.5B	5",150"				V-5			
322	106	1	NO.5B INBD.	5",150"				V-5			
314	107	1	NO.5	5",150"				V-5			
310	108	1	NO.4	5",150"				V-5			
318	109	1	NO.5A	5",150"				V-5			
317	110	1	NO.5A -STBD.	5",150"			TANK TOP-STBD. SIDE-BET. FR. 92-93	V-5			
309	111	1	NO.4	5",150"				V-5			
313	112	1	NO.5	5",150"				V-5			
321	113	1	NO.5B	5",150"				V-5			
323	114	1	NO.5B OUTBD.	5",150"				V-5			
315	115	1	NO.5	5",150"				V-5			
319	116	1	NO.5A	5",150"				V-5			
311	117	1	NO.4	5",150"				V-5			
308	118	1	NO.3 -PORT	5",150"			TANK TOP-STBD SIDE-BET. FR. 76-77	V-5			
306	119	1	NO.3 -CENTERLINE	5",150"				V-5			
307	120	1	NO.3 - STBD.	5",150"				V-5			
304	121	1	NO.2 -PORT	5",150"			TANK TOP.-PORT SIDE BET. FR. 60-61	V-5			
303	122	1	NO.1	5",150"			TANK TOP-STBD. SIDE BET FR. 60-61	V-5			
305	123	1	NO.2 - STBD.	5",150"				V-5			
301	124	1	FOREPEAK BALLAST SUCTION/FILL-IN MAIN	8"150"				V-12			
216	125	1	NO.5A CARGO HOLD DRAIN WELL SUCTION-PORT	3",150" FLGD., 3 VALVE, STOP CHECK, SIMPLEX MANIFOLD, F.&D., COMPLETE WITH AIR MOTOR OPERATOR AND LIMIT SWITCHES			TANK TOP-PORT SIDE-BET. FR. 92-93	V-7			TATE TEMCO DRWG. NO. 3
214	126	1	NO.5 -	3",150"				V-7			
212	127	1	NO.4 - PORT	3",150"				V-7			
215	128	1	NO.4 - STBD.	3",150"			TANK TOP.-STBD. SIDE-BET. FR. 92-93	V-7			
211	129	1	NO.5A - STBD.	3",150"				V-7			
213	130	1	NO.5 - STBD.	3",150"				V-7			
204	131	1	NO.2 CARGO HOLD DRAINWELL SUCTION	3",150" FLGD., 4 VALVE, STOP CHECK, SIMPLEX MANIFOLD, F.&D., COMPLETE WITH AIR MOTOR OPERATOR AND LIMIT SWITCHES			TANK TOP-PORT SIDE BET. FR 92-93	V-13			TATE TEMCO DRWG. NO. 3
210	132	1	NO.5B - PORT	3",150"				V-13			
208	133	1	NO.3	3",150"				V-13			
206	134	1	NO.1	3",150"				V-13			
205	135	1	THRUSTER ROOM BILGE SUCTION	3",150"			TANK TOP-STBD. SIDE BET. FR. 92-93	V-13			
207	136	1	NO.3 CARGO HOLD DRAINWELL SUCTION STBD.	3",150"				V-13			
209	137	1	NO.5B	3",150"				V-13			
203	138	1	NO.2 OIL TANK COFFERDAM DRAINWELL SUCTION	3",150"				V-13			
224	139		NO.8 HOLD DRAINWELL SUCTION-PORT	3",150"			TANK TOP-PORT SIDE BET. FR. 156-157	V-6			TATE TEMCO DRWG. NO. 3
218	140	1	NO.7	3",150"				V-6			

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M-4650-111-6

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MATERIAL DRWG. VALVE NO.	BODY MATERIAL	TRIM MATERIAL	MANUFACTURE'S DRWG NO./FIG. NO.	REQ'N. NO.	FLUID MEDIUM	MATERIAL LIST DRWG. NO.	PIPING DIAG. REF. NO.	VALVE NO.
V-3	BRONZE	BRONZE	LUNKENHEIMER FIG. NO. 1404	503800	SALT WATER	M-4650-181-9	8	211
FO-137		BRONZE STELLITE-S.S.	LUNKENHEIMER FIG. NO. 1512-B		FUEL OIL	M-4650-181-07-1	12	212
FO-137								213
FO-137								214
FO-137								215
FO-137								216
FO-137								217
FO-137								218
FO-137								219
FO-103	CAST STEEL	BRONZE	DEMCO INC. NE-LUG SERIES	503800-C			10	220
FO-104		STAIN. STL.	LESLIE FIG. NO. DVSS DRWG. NO. 107-372815DD				10	221
	CHROME MOLY	CHROME MOLY	GIMPEL MACH. WORKS DRWG. NO. NP-637	500002	STEAM	M-4650-371-09-1	1	222
	PULP STOCK	STAIN. STL.	HILTON PRODUCTS CO	506100	GARBAGE	H-4650-129-01-53	—	223
FO-113	CAST STEEL	BRONZE	TATE TEMCO INC DRWG NO. 32060	503800-A	FUEL OIL	M-4650-181-07-1	10	224
FO-113								225
FO-113								226
FO-113								227
V-14	BRONZE	BRONZE	LUNKENHEIMER FIG. 1400-X	504500-E	SALT WATER	M-4650-181-9	8	228

LIST OF MOTOR AND PNEUMATIC OPERATED VALVES

	CONTROL BOARD N.P. No. △6	VALVE NO	QTY.	SERVICE IDENTIFICATION	DESCRIPTION △1	ACTUATOR FUNCTION (SEE GEN. NOTE NO. 2) △1	VALVE INTERLOCKING OPERATION	OPERATOR LOCATION △3	MATERIAL DRWG VALVE NO.	BODY MATERIAL	TRIM MATERIAL	MANUFACTUR'S DRWG. NO FIG. NO.	RE
▷4	220	141	1	NO. 6 CARGO HOLD DRAINWELL SUCTION-PORT	3", 150# FLGD., 4 VALVE, STOP CHECK, SIMPLEX MANIFOLD, F.&D.; COMPLETE WITH AIR MOTOR OPERATOR & LIMIT SWITCHES.	OPEN-CLOSE, REMOTE POWER, LOCAL POWER, AND LOCAL MANUAL		TANK TOP-PORT SIDE BET. FR. 156-157	V-6	BRONZE	BRONZE	TATE TEMCO INC. DRWG. NO. 32064	50
▷4	222	142	1	NO. 5C	3", 150# FLGD.,				V-6				
▷4	221	143	1	NO. 5C -STBD	3", 150# FLGD.,			TANK TOP-STBD. SIDE BET. FR. 156-157	V-6			TATE TEMCO INC. DRWG. NO. 32064	
▷4	219	144	1	NO. 6	3", 150# FLGD.,				V-6				
▷4	217	145	1	NO. 7	3", 150# FLGD.,				V-6				
▷4	223	146	1	NO. 8	3", 150# FLGD.,				V-6				
△6	108	147	1	D.O. TRANSFER PUMP DISCH. TO EMERGENCY DIESEL GEN. DAY TANK	1½", 150# FLGD, AIR CYLINDER OPERATED, BALL VALVE, F.&D.; SPRING-CLOSED, AIR TO OPEN, WITH LIMIT-SWITCHES FOR ACTU. REMOTE IND. LIGHTS	OPEN-CLOSE, REMOTE POWER, AND LOCAL MANUAL		32'-0" ABV. ℄-PORT SIDE OUTBD.-FR. 178	DO-103	FORGED STEEL	STAINLESS STEEL	ACF INDUSTRIES DRWG. NO. RS-267632	5028
△6	107	148	1	DIESEL OIL DAY TANK	1½", 150# FLGD.,				DO-103				
	-	149											
△6	106	150	1	D.O. DAY TANK DRAIN TO D.O. FILTER COALESCER	1½", 150# FLGD., S.W.D., AIR CYLINDER OPERATED, BALL VALVE, F.&D.; SPRING CLOSED, AIR TO OPEN WITH LIMIT SWITCHES FOR ACTU. REMOTE IND. LIGHTS	OPEN-CLOSE, REMOTE POWER, AND LOCAL MANUAL		25'-0" ABV. ℄-PORT SIDE OUTBD.-FR. 179	DO-104	FORGED STEEL	STAINLESS STEEL	ACF INDUSTRIES DRWG. NO. RS-267632	5028
△6 ▷3	105	151	1	SHIPS SERVICE DIESEL GEN. SUCTION FROM D.O. DAY TANK	1", 150# FLGD., AIR CYLINDER OPERATED, BALL VALVE; F.&D.; SPRING-CLOSED, AIR TO OPEN, WITH LIMIT SWITCHES FOR ACTU. REMOTE IND. LIGHTS			32'-0" ABV. ℄-PORT SIDE OUTBD. FR. 178	DO-105			ACF INDUSTRIES DRWG. NO. RS-267633	
		152											
	104	153	1	DIESEL OIL INNERBOTTOM TANK SUCTION/FILL-PORT	2½", 150# FLGD., FLEX WEDGE, GATE VALVE, F.&D.; O.S.&Y. RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS.	OPEN-CLOSE, REMOTE POWER, LOCAL POWER AND LOCAL MANUAL		6'-0" ABV. ℄-PORT SIDE INBD.-FR. 176	DO-121	CAST STEEL	BRONZE-STELLITE-S.S.	LUNKENHEIMER FIG. NO. 1512-B	5038
	103	154	1	-STBD.	2½", 150# FLGD.,			6'-0" ABV. ℄-STBD. SIDE INBD.-FR. 176	DO-121				
	102	155	1	DIESEL OIL STORAGE TANK NO. 11 SUCTION/FILL-PORT	2½", 150# FLGD., FLEX-WEDGE, GATE VALVE, F.&D., O.S.&Y RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS.			2ND DK. PASS.-PORT BET. FR. 116-117	V-1				
	101	156	1	-STBD.	2½", 150# FLGD.,			STBD.	V-1				
	49	157	1	AFT F.O. TRANSFER MAIN SHUTOFF	8", 150# FLGD.,			13'-0" ABV. ℄-PORT SIDE INBD.-BHD. 157	FO-101				
	50	158	1	FWD.	8", 150# FLGD.,			15'-0" ABV. ℄-PORT SIDE OUTBD.-BHD. 157	FO-101				
	35	159	1	F.O. TANKS OVERFLOW TO F.O. SERVICE TK 16 P -LOWER	12", 150# ASA LUG TYPE, BUTTERFLY VALVE, WITH AIR CYLINDER OPERATORS ONE OPERATOR SHALL CONTROL TWO VALVES.		VALVES NO 159 AND 160 TO BE MECHANICALLY	2ND. DK. PASS.-PORT BET. FR. 151-152	V-1	CAST STEEL NOD. IRON	BRONZE	DEMCO INC. NE-LUG SERIES	503
	36	160	1	16P-UPPER	12", 150#		INTERLOCKED SO 159 IS OPEN & 160 IS CLOSED, OR VISA VERSA	2ND DK. PASS.-PORT BET. FR. 150-151	V-1				
	33	161	1	16S-LOWER	12", 150#		VALVES NO. 161 AND 162 TO BE MECHANICALLY	2ND DK. PASS.-STBD. BET. FR. 151-152	V-1				
	34	162	1	16S-UPPER	12", 150#		INTERLOCKED SO 161 IS OPEN & 162 IS CLOSED, OR VISA VERSA	2ND DK. PASS-STBD. BET. FR. 150-151	V-1				
	63	163	1	F.O. TRANSFER PUMP SUCTION FROM AFT F.O. TRANSFER MAIN	6", 150# FLGD., 2 VALVE, STOP, SIMPLEX MANIFOLD, F.&D.; COMPLETE WITH AIR MOTOR OPERATOR & LIMIT SWITCHES			LOWER LEVEL-PORT SIDE-FR. 161	FO-114	CAST STEEL	BRONZE	TATE TEMCO INC. DRWG. NO. 32061	50380
	64	164	1	FWD.	6", 150# FLGD.				FO-114				
	62	165	1	F.O. TRANSFER PUMP DISCH. TO F.O. SERVICE TANKS MANIFOLD	5", 150# FLGD			LOWER LEVEL-PORT SIDE-FR. 162	FO-115			TATE TEMCO INC. DRWG. NO. 32062	
	61	166	1	F.O. TRANSFER PUMP DISCH. TO FWD. & AFT F.O. TRANSFER MAINS	5", 150# FLGD.				FO-115				
	55	167	1	F.O. SERVICE TANK 16 P SUCTION —— LOWER AT MANIFOLD	5", 150# FLGD., 8 VALVE, STOP, DUPLEX MANIFOLD, F.&D.; COMPLETE WITH AIR MOTOR OPERATOR & LIMIT SWITCHES WITH AIR OPERATED INTERLOCK.		IF OPEN, 224 CANNOT BE OPENED	LOWER LEVEL-PORT SIDE-BHD. 157	FO-113			TATE TEMCO INC. DRWG. NO. 32060	
	56	168	1	16 P -UPPER	5", 150# FLGD.,		IF OPEN, 225 CANNOT BE OPENED		FO-113				
	53	169	1	16S -LOWER	5", 150# FLGD.,		IF OPEN, 226 CANNOT BE OPENED		FO-113				
	54	170	1	16S -UPPER	5", 150# FLGD.,		IF OPEN, 227 CANNOT BE OPENED		FO-113				
▷3	39	171	1	16 P SUCTION/FILL -LOWER AT TANK	5", 150# FLGD, FLEX-WEDGE, GATE VALVE, F.&D., O.S.&Y. RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITIONING INDICATING LIGHTS			TANK TOP-PORT BET. FR. 153-154	V-2	CAST STEEL	BRONZE STELLITE-S.S.	LUNKENHEIMER FIG. NO. 1512-B	50
▷3	40	172	1	16P -UPPER	5", 150# FLGD,			31'-4" FLAT PORT BET 156-157	V-2				
▷3	37	173	1	16S -LOWER	5", 150# FLGD.,			TANK TOP STBD BET. FR. 153-154	V-2				
▷3	38	174	1	16S -UPPER	5", 150# FLGD.,			31'-4" FLAT-STBD. BET. FR. 157-158	V-2				
	32	175	1	F.O. DEEP TANK 15P SUCTION/FILL-PORT	4", 150# FLGD,			TANK TOP-PORT BET FR 141-142	V-3				
	31	176	1	15S -STBD.	4", 150# FLGD.,			-STBD	V-3				
	28	177	1	13P -PORT	4", 150# FLGD.,			2ND DK. PASS.-PORT BET. FR. 133 & 134	V-1				
	27	178	1	13S -STBD.	4", 150# FLGD,			-STBD.	V-1				
	30	179	1	14P -PORT	4", 150# FLGD.,			2ND DK. PASS.-PORT BET. FR. 130-131	V-1				
	29	180	1	14S -STBD.	4", 150# FLGD.,			STBD.	V-1				
	26	181	1	12P -PORT	4", 150# FLGD.,			2ND DK. PASS.-PORT BET. FR. 125-126	V-1				
	25	182	1	12S -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	22	183	1	10AP -PORT	4", 150# FLGD,			2ND DK. PASS.-PORT BET. FR. 114.3-114.4	V-1				
	21	184	1	10AS -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	24	185	1	10BP -PORT	4", 150# FLGD.,			2ND DK. PASS.-PORT BET. FR. 114.2-114.3	V-1				
	23	186	1	10BS -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	20	187	1	10P -PORT	4", 150# FLGD.,			2ND DK. PASS.-PORT BET. FR. 109-110	V-1				
	19	188	1	10S -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	18	189	1	9P -PORT	4", 150# FLGD,			2ND DK. PASS.-PORT BET. FRS. 101-102	V-2				
	17	190	1	9S -STBD.	4", 150# FLGD.,			-STBD.	V-2				
	16	191	1	8P -PORT	4", 150# FLGD.,			TANK TOP-PORT BET. FRS. 92-93	V-1				
	15	192	1	8S -STBD.	4", 150# FLGD.,			-STBD	V-1				
	14	193	1	7P -PORT	4", 150# FLGD.,			-PORT	V-1				
	13	194	1	7S -STBD.	4", 150# FLGD.,			-STBD	V-1				
	12	195	1	6P -PORT	4", 150# FLGD.,			TANK TOP-PORT BET. FR. 76-77	V-1				
	11	196	1	6S -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	10	197	1	5P -PORT	4", 150# FLGD.,			-PORT	V-1				
	09	198	1	5S -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	08	199	1	4P -PORT	4", 150# FLGD.,			TANK TOP-PORT BET. FR. 60-61	V-1				
	07	200	1	4S -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	06	201	1	3P -PORT	4", 150# FLGD.,			-PORT	V-1				
	05	202	1	3S -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	04	203	1	2P -PORT	4", 150# FLGD.,			TANK TOP-STBD. BET. FR. 36-37	V-1				
	03	204	1	2S -STBD.	4", 150# FLGD.,			-STBD.	V-1				
	02	205	1	1P -PORT	4", 150# FLGD.,			29'-8" FLAT-PORT BET. FR. 26-27	V-1				
	01	206	1	1S -STBD.	4", 150# FLGD.,			-STBD.	V-1				
		207	1	DISTILLING PLANT SEA SUCTION	5", 150# FLGD., SOLID WEDGE DISC, GATE VALVE, F.&D.; O.S.&Y RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS			6'-0" ABV. ℄-PORT SIDE INBD.-FR. 161	AC-112	BRONZE	MONEL	LUNKENHEIMER FIG. NO. 1404	503800
	522	208	1	HEELING TANK DUMP TO WING TANK 10-D PORT	10", 150# FLGD.,			2ND DK. PASSAGEWAY PORT SIDE FR. 114.28	V-3		BRONZE		
	521	209	1	10-C PORT	10", 150# FLGD.,			2ND DK. PASSAGEWAY PORT SIDE FR. 114.25	V-3				
	520	210	1	10-D STBD.	10", 150# FLGD.,			2ND DK. PASSAGEWAY STBD. SIDE FR. 114.28	V-3				

AUTOMATION INDUSTRIES, INC.
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LIST OF MOTOR AND PNEUMATIC OPERATED VALVES

CONTROL BOARD N.R No.	VALVE NO.	QTY.	SERVICE IDENTIFICATION	DESCRIPTION	ACTUATOR FUNCTION (SEE GEN. NOTE NO. 2)	VALVE INTERLOCKING OPERATION	OPERATOR LOCATION	MATERIAL DRWG. VALVE NO.	BODY MATERIAL	TRIM MATERIAL	MANUFACTURE'S DRWG NO./FIG. NO.	REQ'N. NO.	FLUID MEDIUM	MATERIAL LIST DRWG. NO.	PIPING DIAG. REF. NO.	VALVE NO.
519	211	1	HEELING TANK DUMP TO WING TANK 10-C STBD.	10",150" FLGD., SOLID WEDGE DISC. GATE VALVE, F.&D.; O.S.&Y. RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS	OPEN-CLOSE, REMOTE POWER, LOCAL POWER, AND LOCAL MANUAL		2ND DK. PASSAGEWAY STBD. SIDE FR. 114.25	V-3	BRONZE	BRONZE	LUNKENHEIMER FIG. NO. 1404	503800	SALT WATER	M-4650-181-9	8	211
44	212	1	UPPER F.O. SERVICE TANK HIGH SUCTION - PORT	3",150" FLGD., FLEX-WEDGE GATE VALVE, F.&D.; O.S.&Y. RISING STEM, COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS			35'-0" ABV. ℄ PORT SIDE OUTBD.-FR. 156	FO-137		BRONZE STELLITE-S.S.	LUNKENHEIMER FIG. NO. 1512-B		FUEL OIL	M-4650-181-07-1	12	212
42	213	1	- STBD.	3",150"			38'-0" ABV. ℄ STBD. SIDE OUTBD.-FR. 156	FO-137								213
48	214	1	STRIPPING - PORT	3",150"			36'-0" ABV. ℄ PORT SIDE OUTBD.- FR. 156	FO-137								214
46	215	1	- STBD.	3",150"			36'-0" ABV. ℄ STBD. SIDE OUTBD.- FR. 156	FO-137								215
43	216	1	LOWER HIGH - PORT	3",150"			9'-0" ABV. ℄ - PORT SIDE OUTBD.- FR. 155	FO-137								216
41	217	1	- STBD.	3",150"			9'-0" ABV. ℄ - STBD. SIDE OUTBD.- FR. 155	FO-137								217
47	218	1	STRIPPING - PORT	3",150"			8'-0" ABV. ℄ - PORT SIDE OUTBD.- FR. 155	FO-137								218
45	219	1	- STBD.	3",150"			8'-0" ABV. ℄ - STBD. SIDE OUTBD.- FR. 155	FO-137								219
52	220	1	FWD. F.O. TRANSFER MAIN MODULATING VALVE	8",150" ASA LUG TYPE, BUTTERFLY VALVES, WITH AIR DIAPHRAGM OPERATOR AND LIMIT SWITCHES FOR ACTU. REMOTE INDICATING LIGHTS			16'-0" ABV. ℄ - PORT SIDE INBD.-BHD. 157	FO-103	CAST STEEL	BRONZE	DEMCO INC. NE-LUG SERIES	503800-C			10	220
51	221	1	AFT	6" 150" FLGD. DIAPH. CONTROL VALVE W 85A ALUM. HOD SPRING ACTUATOR AND MICRO SWITCH FOR ACTUATING REMOTE IND. LIGHTS			15'-0" ABV. ℄ - PORT SIDE OUTBD.-BHD. 157	FO-104		STAIN. STL.	LESLIE FIG. NO. DV5S DRWG. NO. 107572815DD				10	221
	222	1	ASTERN GUARDIAN VALVE	8",900" FLGD. ASTERN GUARDIAN VALVE WITH ELECTRIC MOTOR OPERATOR	OPEN-CLOSE, REMOTE POWER, LOCAL POWER & LOCAL MANUAL	(SEE CENTRALIZED CONTROL SYSTEM-MANEUVERING)	17'-6" ABV. - STBD SIDE - FR 165		CHROME MOLY	CHROME MOLY	GIMPEL MACH. WORKS DRWG. NO. NP-637	500002	STEAM	M-4650-371-09-1	1	222
	223	1	GARBAGE CHUTE OVBD.	24",150" FLGD. GATE VALVE SELF CLEANING NON-CLOGGING TYPE WITH ELECTRIC MOTOR OPERATOR	OPEN CLOSE LOCAL MANUAL	INTERLOCK WITH GARBAGE SCUTTLE	30'-0 ABV. ℄ - PORT SIDE OUTBD.-FR. 172		PULP STOCK	STAIN. STL.	HILTON PRODUCTS CO	506100	GARBAGE	H-4650-129-01-53	—	223
59	224	1	F.O. SERVICE TANK 16P DISCHARGE - LOWER AT MANIFOLD	5",150" FLGD. B VALVE STOP DUPLEX MANIFOLD F.&D. COMPLETE WITH AIR MOTOR OPERATOR & LIMIT SWITCHES WITH AIR OPERATED INTERLOCK	OPEN-CLOSE, REMOTE POWER, LOCAL POWER, AND LOCAL MANUAL	IF OPEN 167 CANNOT BE OPENED	LOWER LEVEL PORT SIDE - BHD. 157	FO-113	CAST STEEL	BRONZE	TATE TEMCO INC DRWG. NO. 32060	503800-A	FUEL OIL	M-4650-181-07-1	10	224
60	225	1	16P - UPPER	5",150" FLGD		IF OPEN 168 CANNOT BE OPENED		FO-113								225
57	226	1	16S - LOWER	5",150" FLGD.		IF OPEN 169 CANNOT BE OPENED		FO-113								226
58	227	1	16S - UPPER	5",150" FLGD.		IF OPEN 170 CANNOT BE OPENED		FO-113								227
202	228	1	ECHO DEPTH SOUNDER CHAMBER SUCTION	2½",150" FLGD., GLOBE STOP-CHECK VALVE, F.&D.; O.S.&Y. RISING STEM COMPLETE WITH AIR MOTOR OPERATOR & POSITION INDICATING LIGHTS			TANK TOP - STBD. SIDE INBD.- FR. 93	V-14	BRONZE	BRONZE	LUNKENHEIMER FIG. 1400-X	504500-E	SALT WATER	M-4650-181-9	8	228

CONTROL BOARD N.P. No.	VALVE NO	QT
220	141	1
222	142	1
221	143	1
219	144	1
217	145	1
223	146	1
108	147	1
107	148	1
	149	
106	150	1
105	151	1
	152	
104	153	1
103	154	1
102	155	1
101	156	1
49	157	1
50	158	1
35	159	1
36	160	1
33	161	1
34	162	1
63	163	1
64	164	1
62	165	1
61	166	1
55	167	1
56	168	1
53	169	1
54	170	1
39	171	1
40	172	
37	173	
38	174	
32	175	1
31	176	1
28	177	1
27	178	1
30	179	1
29	180	1
26	181	1
25	182	1
22	183	1
21	184	1
24	185	1
23	186	1
20	187	1
19	188	1
18	189	1
17	190	1
16	191	1
15	192	1
14	193	1
13	194	1
12	195	1
11	196	1
10	197	1
09	198	1
08	199	1
07	200	1
06	201	1
05	202	1
04	203	1
03	204	1
02	205	1
01	206	1
	207	1
522	208	1
521	209	1
520	210	1

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M-4650-111-6

Oct 1980

8X

FRAME 5 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 8X

BUILDERS PLAN NO. M4650-111-9

FRAME 1 OF 3

OL VALVES

DER	FLUID MEDIUM	SERVICE	REMARKS	MATERIAL LIST DRWG. NO.	PIPING DIAGRAM REF. NO.	ITEM NO.
X4650	STEAM	CONTROL DESUPERHEATER OUTLET TO SUPERHEATER INLET-PORT	ACTUATOR: 85 A ALUM. W/HOD SPRING	M-4650-371-09-1	1	1
4650		ASTERN STEAM LINE			1	2
X4650		868°/40° REDUCING STATION-MAKE-UP STEAM	ACTUATOR: 55 ALUM. W/HOD SPRING	M-4650-371-09-9	2	3
		850°/150° AUXILIARY STEAM	:55R ALUM. SPRING		2	4
W4650		DESUPERHEATED STEAM TO SOOT BLOWER-PORT			2	5
X4650		850°/125° STEAM TO CARGO TK. CLEANING HEATER	ACTUATOR: 85 R ALUM. SPRING		2	6
		150°/50° STEAM TO F.O. HEATERS	:35 R ALUM. SPRING		2	7
W4650		STM. TO CARGO DEHUMIFICATION UNIT REDUCING STATION			2	8
						9
X4650		H.P. TO L.P. CROSSOVER EXTRACTION STEAM	:85 AR ALUM (135 MTG) SPRING	M-4650-371-04-1	3	10
		EXTRACTION STEAM DUMP	:135 R ALUM. W HOD SPRING		3	11
X4650		STEAM TO POTABLE WATER HEATER			3	12
		STEAM TO CARGO COIL HOT WATER HEATER			3	13
X4650		CONTROL DESUPERHEATER OUTLET TO SUPERHEATER INLET-STBD.	ACTUATOR: 85A ALUM W/HOD SPRING	M-4650-371-09-1	1	14
5-W4650		DESUPERHEATED STEAM TO SOOT BLOWER-STBD.		M-4650-371-09-9	2	15
	FRESH WATER	BOTTOM BLOW-OFF CONTINUOUS BLOW DOWN-PORT		M-4650-372-11-1	6	16
		-STBD.			6	17
X4650		CARGO TANK CLEANING HEATER DRAIN COOLER LEVEL CONTROL	ACTUATOR: 35 ALUM. SPRING		5	18
		1ST STAGE HTR & GLAND EXH. CONDENSER LEVEL CONTROL	:35 R ALUM. SPRING		5	19
		CONDENSATE RECIRC. FROM 1ST STAGE TO MAIN CONDENSER	:35 ALUM. SPRING		5	20
		4TH STAGE FD. HTR. DRAIN TO 3RD STAGE FD. HTR.	:35 ALUM. SPRING		5	21
0-W4650		LOW PRESSURE FEED WATER MAKE-UP	:35R ALUM. SPRING		5	22
		MAIN CONDENSATE DUMP	:55 R ALUM SPRING		5	23
W4650		3RD STAGE FEED WATER HEATER DRAIN TO D.C. HEATER	:35 ALUM SPRING		5	24
		MAIN CONDENSATE DISCHARGE TO DEAERATOR-LEVEL CONTROL	:85 A ALUM. SPRING		5	25
		ATMOS. DRAIN TANK DRAIN TO D.C. HEATER	:35 R ALUM. SPRING		5	26
		AIR LOCK FOR FEED WATER MAKE-UP VALVE			5	27
X4650		PORT FD. PUMP RECIRC. VALVE	ACTUATOR: 85 ALUM. SPRING		6	28
2-W4650		MAIN FD. PUMP DISCH. TO BOILER-PORT	:302 SST SPRING		6	29
		-STBD.	:		6	30
W4650		AUTOMATIC DRAIN VALVE	:55 ALUM SPRING	—	7	31
	STEAM	GLAND SEAL STM. SUPPLY TO MAIN PROPULSION	:35 ALUM SPRING	M-4650-371-1	8	32
		GLAND SEAL EXCESS STEAM DUMP	:85 R ALUM W/HOD SPRING		8	33
						34
X4650	FRESH WATER	HOT WATER SUPPLY TO CARGO OIL TANK HEATER FROM NO. 1 PORT TK.	:35 R ALUM SPRING	M-4650-375-05-1	9	35
		NO. 1 STBD. TK.			9	36
		NO. 2 PORT TK.			9	37
		NO. 2 STBD. TK.			9	38
		NO. 1 D.B. TK.			9	39
		NO. 2 D.B. TK.			9	40
		NO. 3 PORT TK.		M-4650-375-05-9	9	41
		NO. 3 STBD. TK.			9	42
		NO. 3 D.B. TK.			9	43
5-X4650	STEAM	STEAM SUPPLY TO DISTILLING PLANT	:55 ALUM. SPRING	M-4650-371-04-1	10	44
3-W4650	SALT WATER	SALT WATER FEED HEATER TEMP. CONTROL	FURNISHED WITH DISTILLERS	—	10	45
X4650		EMERGENCY SUPPLY TO SALT WATER SERVICE SYS. FROM FIREMAIN		M-4650-372-02-5	11	46
0-W4650		CARGO DEHUMIDIFICATION UNIT COOLING WATER SUPPLY			12	47
14-W4650		CARGO REFRIGERATION COND. COOLING WATER DISCH.-NO. 1			12	48
		NO. 2			12	49
		NO. 3			12	50
		NO. 4			12	51
		NO. 5			12	52
		NO. 6			12	53
		NO. 7			12	54
		NO. 8			12	55
2-W4650		A/C UNIT CONDENSER COOLING WATER DISCHARGE-NO. 1			12	56
		-NO. 2			12	57
W4650		SHIPS STORES REFRIG. COND. COOLING WATER DISCH.-NO. 1			12	58
		NO. 2			12	59
4-W4650		CARGO PUMPOUT CONDENSER COOLING WATER DISCHARGE			12	60
31-X4650	DIESEL OIL	D.O. SUPPLY TO PORT AND STBD. BOILER		M-4650-181-07-1	13	61
W4650	FUEL OIL	F.O. SERVICE PUMP RECIRC.-BYPASS			14	62
		COMBUSTION CONTROL VALVE-PORT BOILER			14	63
		-STBD. BOILER			14	64
34-X4650	LUBE OIL	TURBINE LUBE OIL TEMP. CONTROL	ACTUATOR: ROBERTSHAW VC-240 HWWD SPRING	M-4650-373-06-1	15	65
31-X4650		LUBE OIL TO TURBINE BEARINGS OVERPRESSURE CONT. VALVE	ACTUATOR: 55R ALUM. SPRING		16	66
	AIR	S.S. AIR SUPPLY TO CONTROL AIR SYSTEM 150/85 PSIG		M-4650-371-01-1	17	67
		AIR SUPPLY TO PNEUMATIC OPERATED VALVES 150/110 PSIG			17	68
02-X4650		SEWAGE EJECTOR REDUCING VALVE 110/22 PSIG			17	69
					17	70

3 2 1

GENERAL NOTES

1. ITEMS MARKED THUS ⊗ ARE SUPPLIED BY VENDOR
2. NO ITEMS ARE TO BE ORDERED FROM THIS PLAN.

RESERVATIONS

△1 1. ~~RESERVE ITEM NOS. 16, 17, 100 & 101 PENDING RECIEPT OF VENDOR INFORMATION~~

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	6-12-78		1. ADDED REF. NO. 18 2. ADDED ITEM NOS 86, 87, 88, 94, 95 & 102. 3. DELETED ITEM NOS 79 & 80 4. REVISED MANUFACTURER'S FIG. NO. TO AGREE WITH LATEST VENDOR'S INFORMATION FOR THE FOLLOWING: 3, 4, 6, 7, 10-13, 18-33, 35-44, 46-61, 65-68 & 71-74. 5. ADDED PURCHASE ORDER NO. TO ALL ITEMS. 6. REMOVED RES. NO. 1 ITEMS 4, 5 & 6 OF THE ABOVE ALT. TO AGREE WITH G.G. SHARP LTR. NO. 5587/548-24 DATED FEB. 8, 1978.	G.L.W.	G.G. SHARP LETTER 17 JULY 1978
2	8-2-78	7 6	1-BODY MATERIAL FOR ITEMS No. 81, 82, 83, & 84 CHANGED FROM ALUMINUM TO CAST BRONZE, TRIM MATERIAL CHANGED FROM ALUMINUM TO BRONZE 2-PURCHASE ORDER No. ADDED TO ITEMS No. 77, 78, 88, 94, 95, & 102	P.G.	G.G.S. LETTER 9-5-78
3	1-26-79	4	1-REDUCING VALVE "ITEM #46" CHANGED FROM "135 PSI TO 125PSI" TO "125PSI TO 35PSI", TO AGREE WITH MATERIAL ORIGINALLY SPECIFIED AND PURCHASED	P.G.	2-2-79 sga

D C B A

HULL	DESIGN	CHARGE
4651	27,340 D.W.T. CONTAINERSHIP	8450
4650		8450

JOB NO. NONE

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE DATE DEC. 16, 1977
DRAWN G. WOLFORD APPROVED
TRACED APPROVED
CHECKED J.W. Sauter APPROVED W.B. Jr. Tjorh

PLAN NO. M-4650-111-9 ALT. NO. 3

LIST OF CONTROL VALVES

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	2-8-78				
A.B.S.	☒				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

NO.	PLAN NO.	TITLE
△1 18	-40	POTABLE AND F.W. SYSTEM IN MACHY. SPACE
17	-72	COMPRESSED AIR SYSTEM
16	-70	PROPULSION TURBINE & GEAR LUBE OIL SYSTEM
15	-69	PROPULSION LUBE OIL SERVICE SYSTEM
14	-64	FUEL OIL SERVICE SYSTEM
13	-61	DIESEL OIL FILLING TRANSFER & SERVICE SYSTEM
12	-47	SALT WATER SERVICE SYSTEM
11	-46	SALT WATER SERVICE SYSTEM
10	-39	LOW PRESSURE DISTILLING PLANT SYSTEM
9	-33	CARGO TANK F.W. HEATING SYSTEM
8	-31	PROP & AUX. TURBINE GLAND SEALING & EXHAUST SYSTEM
7	-30	PROPULSION TURBINE DRAINS SYSTEM
6	-25	HIGH PRESSURE FEED SYSTEM
5	-23	CONDENSATE & DRAIN TRANSFER SYSTEM
4	-35	TANK HEATING COIL & STEAMING OUT SYSTEMS
3	-13	EXTRACTION & EXHAUST STEAM SYSTEM
2	-11	AUX STEAM SYSTEM
1	M-4650-111-20-10	MAIN STEAM SYSTEM

REFERENCE PLANS

4650-51
4650-51REPL.
4650-51REPL.
4650-51REPL.

		DATE OF ISSUE			
	ALTERATION	0	1	2	3
	ENGINEERING DISTRIBUTION	12-19-77	6-14-78	8-3-78	2-8-79
MAIL	OWNERS	6	6	5	3
	AMERICAN BUREAU				
	LLOYD'S R.S.				
	U.S.M.A.				
	U.S. NAVY				
	U.S.C.G.				
	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.	1	1	1	1
	AM. BU. INSP.				
	LLOYD'S INSP.				
	U.S.M.A. INSP.	1	1	1	1
	U.S. NAVY INSP.				
	U.S.C.G. INSP.				
OFFICE	HULL DRAFT.-21	1	1	1	1
	MACH. DRAFT.-22	2	2	2	2
	ELEC. DRAFT.-23	1	1	1	1
	OUTFIT. DRAFT.-25				
	ESTIMATING				
	DAUGHERTY-CTD	1	1	1	1
MISC.	PRODUCTION (BCD)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	MILLER-PLANNING	2			
	TOTAL ENG'R. DIST.	15	13	12	10
	YARD DISTRIBUTION	12-19-77	6-14-78	8-3-78	[illegible]
YARD	WO OFFICE	1	1	1	1
	J. SIMMONS	1	1	1	1
	PIECE RATE-11	1	1	1	1
	TEST DEPARTMENT				1
	Q-ASSURANCE	1	1	1	1
	PLANNING	1	1	1	1
STRUCTURAL	GROUND ASSEMBLY	2	2	2	2
	35 DEPT.	2	2	2	2
	H. LEVY	1	1	1	1
	P. McNAIR	1	1	1	1
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.	2	2	2	2
	OPTICAL DETAIL-48	2	2	2	2
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP-52	6	6	6	6
	OUTFIT. #1 PIER	1	1	1	1
	PIPE DRAFT.-52	2	2	2	2
	BOILER SHOP-56	1	1	1	1
	OUTSIDE MACH.-60	1	3	3	3
	Q-MATERIAL	1	1	1	1
	ELECTRIC SHOP-70				
	SHEET MET. SHOP-74				
	COPPER SHOP-81				
	PAINT SHOP-78	1	1	1	1
	WELDING				
OTHER	MOLD LOFT-41	1	1	1	1
	BRACKET SHOP				
	H. DOUGHERTY				1
	BROWNS-BAHN				1
	TOTAL YARD DIST.	27	31	31	31

4650-51-ALT.0
4650-51-ALT. 1
4650-51-ALT. 2

M-4650-111-9

M-562 15.0 SQ.FT.

ROL VALVES

TION NO.	PURCHASE ORDER NO.	FLUID MEDIUM	SERVICE	REMARKS	MATERIAL LIST DRAWING NO.	PIPING DIAGRAM REF. NO.	ITEM NO.
016	1560-310-1527-X4650	STEAM	STM. TO HTG. COILS IN UPPER F.O. TANK 16P		M-4650-375-05-9	4	71
016			16S			4	72
016			LOWER 16P			4	73
016			16S			4	74
012-C	1560-617-1506-W4650	FRESH WATER	MAIN FEED PUMP NO.1 RECIRC.	ACTUATOR: SS ALUM. SPRING	M-4650-372-11-1	6	75
012-C			NO.2			6	76
00-J	1560-616-1521-Y4650	AIR	AIR TO AFT FUEL OIL TRANSFER MAIN MODULATING VALVE PILOT		M-4650-371-01-1	17	77
00-J	1560-616-1521-Y4650		FWD.			17	78
							79
							80
25	1560-929-1507-W4650		AIR TO TANK LEVEL INDICATING PANEL NO.1 26'-0" FLAT		M-4650-412-18	17	81
			NO.2			17	82
			NO.3			17	83
			NO.4 WHEELHOUSE			17	84
47	1560-720-1510-W4650		AIR TO CARGO DEHUMIDIFICATION STEAM & S.W. CONT. VLV. PILOT		M-4650-371-01-1	17	85
3-A	1560-728-1528-W4650		S.W. TEMP. REG. TO S.S. DIESEL GEN.		M-4650-372-02-5	11	86
			F.W. TEMP. REG. TO S.S. DIESEL GEN.		M-4650-183-11-4	18	87
00-J	1560-616-1521-Y4650		150°/35° AIR TO BLR. OBVS. DOORS PORT & STBD		M-4650-371-01-1	17	88
02	1560-610-1512-W4650		AIR TO GLAND SEAL STM. SUPPLY TO MAIN PROPULSION		M-4650-371-01-1	17	89
			AIR TO GLAND SEAL EXCESS STEAM DUMP			17	90
			AIR TO AUTOMATIC DRAIN VALVE			17	91
087	1560-913-1502-W4650		AIR TO CONTROL DESUPERHEATER OUTLET TO SUPERHEATER INLET-PORT I/P			17	92
			-STBD I/P			17	93
00-J	1560-616-1521-Y4650		150°/20° AIR TO BOILER TEMP. PROBE			17	94
	1560-616-1521-Y4650		70°/45° AIR TO MAIN FEED PUMP SPEED CONTROL GOV.			17	95
087	1560-913-1502-W4650		AIR TO FORCED DRAFT BLOWER INLET VANE & TRANSDUCER-PORT			17	96
			-STBD.			17	97
018	1560-421-1531-X4650		AIR TO MAIN FEED PUMP NO.1 RECIRC. CONTROL VALVE			17	98
018			NO.2			17	99
087	1560-913-1502-W4650		AIR TO F.O. BURNER SHUT-OFF VALVES AIR REGISTER & ING. ACT.-PORT			17	100
			-STBD.			17	101
00-J	1560-616-1521-Y4650		150°/90° AIR TO BOW THRUSTER CONTROLS		M-4650-371-01-9	17	102
							103
							104
							105
							106
							107
							108
							109
							110
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LIST OF CONTROL VALVES

ITEM NO.	SEE GEN. NOTE NO.1	VALVE NO.	QTY.	SIZE	TYPE END CONN.	TRIM MATERIAL	BODY MATERIAL	TYPE	MANUFACTURER'S FIG. NO. OR DRWG. NO.	REQUISTION NO.	PURCHASE ORDER NO.	FLUID MEDIUM	SERVICE
1	⊗	S-109	1	4"	900° FLGD.	STAIN. STL. STELLITE	CHROME MOLY	DIAPH. CONTROL VALVE W/AIR RED VALVE & MOORE POSITIONER	LESLIE FIG. NO. DO5X DRWG. NO 102 7860 33	500016-C	1560-801-1533 X4650	STEAM	CONTROL DESUPERHEATER OUTLET TO SUPERHEATER INLET-PORT
2	⊗	—	1	8"	900°	CHROME MOLY	CHROME MOLY	ASTERN GUARDIAN VALVE-MOTER OPERATED	GIMPEL MACH. WORKS DRWG. NO. NP-637	500002	1560-610-1512-W4650		ASTERN STEAM LINE
3		AS-120	1	2½"	600°	STAIN. STL. STELLITE	CAST STEEL	DIAPH. CONTROL VALVE W/MOORE POSIT. & MICRO SWITCHES	LESLIE FIG. NO. DDB5-3X DRWG. NO. 103-9315-05 ALT 1	500020	1560-309-1515-X4650		868°/48° REDUCING STATION-MAKE-UP STEAM
4		AS-122	1	2"				CONTROL VALVE W/CONTROL PILOT & AIR RED. VALVE & FILTER	LESLIE FIG. NO. DDO5K DRWG. NO. 101-8671-02 ALT.0	500020			850°/150° AULIXARY STEAM
5	⊗	AS-121	1	2"	600° SKWLD			DIAPH. CONTROL VALVE	FISHER TYPE 667-ES DWG. NO. 509963-101P B	500001	1560-616-1505-W4650		DESUPERHEATED STEAM TO SOOT BLOWER-PORT
6		AS-123	1	2"	FLGD			DIAPH. CONTROL VALVE W/TEMP PILOT & DIFFER. PILOT W/ AIR RED. VALVE AND FILTER	LESLIE FIG. NO. DDO5X DRWG. NO. 101-931304 ALT.0	500016	1560-310-1527-X4650		850°/125° STEAM TO CARGO TK. CLEANING HEATER
7		AS-124	1	1"	150°				LESLIE FIG. NO. DOO5 DRWG. NO. 101-4236-71 ALT.0	500016			150°/50° STEAM TO F.O. HEATERS
8	⊗	AS-125	1	¾"						500047	1560-720-1510-W4650		STM. TO CARGO DEHUMIFICATION UNIT REDUCING STATION
9													
10		E-124	1	2½"	150°	STAIN. STL. STELLITE		DIAPH. CONTROL VALVE W/MOORE POSIT. & MICRO SWITCHES	LESLIE FIG. NO. DDLS-1 DRWG. NO. 101-2318-28 ALT.0	500020	1560-309-1515-X4650		H.P. TO L.P. CROSSOVER EXTRACTION STEAM
11		E-125	1	6"					LESLIE FIG. NO. DDLS-1 DRWG. NO. 101-5278-07 ALT.0	500020			EXTRACTION STEAM DUMP
12		E-126	1	1"		STAIN STL.		TEMPERATURE REGULATOR	LESLIE FIG. NO. GTS-4 DRWG. NO. 602-7122-02 ALT.0	500016	1560-310-1527-X4650		STEAM TO POTABLE WATER HEATER
13		E-127	1	1½"	300°		CAST BRONZE		LESLIE FIG. NO. GTB-4 DRWG. NO. 602-5918-05 ALT.0	500016			STEAM TO CARGO COIL HOT WATER HEATER
14	⊗	S-109	1	4"	900°	STAIN. STL. STELLITED	CHROME MOLY	DIAPH. CONT. VALVE W AIR RED. VALVE & MOORE POSITIONER	LESLIE FIG. NO. DO5X DRWG. NO. 102-7860-33	500016-C	1560-801-1533-X4650		CONTROL DESUPERHEATER OUTLET TO SUPERHEATER INLET-STBD.
15	⊗	AS-121	1	2"	600° SOCKWD		CAST STEEL		FISHER TYPE 667-ES DWG. NO. 509963-101P B	500001	1560-616-1505-W4650		DESUPERHEATED STEAM TO SOOT BLOWER-STBD.
16	⊗	W-113	1	½"	1500° FLGD.	STAIN. STL. STELLITED	CAST STEEL	GLOBE VALVE F.I.D. WITH DIAPHRAGM ACTUATOR-AIR TO OPEN -SPRING CLOSED	EDWARDS FIG. 3624 W FISHER TYPE 667-40 ACT.	500041-B		FRESH WATER	BOTTOM BLOW-OFF CONTINUOUS BLOW DOWN-PORT
17	⊗	W-113	1	½"						500041-B			-STBD.
18		AW-122	1	1"	150°	STAIN. STL. STELLITE	CAST BRONZE	DIAPH. CONTROL VALVE W/FLOATLESS CONTROL PILOT & AIR RED. VALVE & FILTER	LESLIE FIG. NO. DL-3 DRWG. NO. 101-5654-29 ALT.0	500017	1560-329-1517-X4650		CARGO TANK CLEANING HEATER DRAIN COOLER LEVEL CONTROL
19		AW-123	1	1¼"	150°		CAST BRONZE		LESLIE FIG. NO. DDL-3 DRWG. NO. 101-4583-13 ALT.0	500017			1ST STAGE HTR & GLAND EXH. CONDENSER LEVEL CONTROL
20		AW-124	1	1"	150°			W/DIFFERENTIAL CONTROL PILOT AIR RED. VALVE & FILTER	LESLIE FIG. NO. DL-3 DRWG. NO. 101-5630-88 ALT.0	500017			CONDENSATE RECIRC. FROM 1ST STAGE TO MAIN CONDENSER
21		AW-125	1	1"	300°	STAIN. STL. STELLITE	CAST STEEL	DIAPH. CONTROL VALVE, W/FLOATLESS LEVEL PILOT, & AIR REDUCING VALVE WITH FILTER	LESLIE FIG. NO. DOS DRWG. NO. 101-4239-38 ALT.0	500017			4TH STAGE FD. HTR. DRAIN TO 3RD STAGE FD. HTR.
22	⊗	AW-126	1	1½"	150°	STAINLESS STEEL	CAST BRONZE		LESLIE FIG. NO. DDL-3 DRWG. NO. 101/1.4.2.1 ALT.5	500006	1560-823-1500-W4650		LOW PRESSURE FEED WATER MAKE-UP
23	⊗	AW-127	1	2"					LESLIE FIG. NO. DDL-3 DRWG. NO. 101 4.2.5 ALT.2	50006			MAIN CONDENSATE DUMP
24		AW-128	1	1"	150°	STAIN. STL. STELLITE	CAST BRONZE	DIAPH. CONTROL VALVE W/FLOATLESS LEVEL PILOT & AIR REDUCING VALVE WITH FILTER	LESLIE FIG. NO. DL-3 DRWG. NO. 101-4086-17 ALT.0	500017	1560-329-1517-W4650		3RD STAGE FEED WATER HEATER DRAIN TO D.C. HEATER
25		AW-141	1	4"			CAST STEEL	DIAPH. CONTROL VALVE W/LEVEL CONTROL PILOT & AIR REDUCING WITH STRAINER	LESLIE FIG. NO. DLS-1 DRWG. NO. 101-3645-30 ALT.0	500017			MAIN CONDENSATE DISCHARGE TO DEAERATOR-LEVEL CONTROL
26		AW-129	1	1"		STAINLESS STEEL	CAST BRONZE	DIAPH. CONTROL VALVE W/FLOATLESS LEVEL CONTROL PILOT & AIR REDUCING VALVE W/FILTER	LESLIE FIG. NO. DDL-3 DRWG. NO. 101-4084-23 ALT.0	500017			ATMOS. DRAIN TANK DRAIN TO D.C. HEATER
27		AW-130	1	½"	SCREWED			TYPE 3, OPERATING VALVE, W/FLOATLESS LEVEL CONTROL PILOT & FIXED PROP. BAND AND AIR REDUCING VALVE WITH FILTER	LESLIE FIG. NO. BAT-1 DRWG. NO. 801-1279-02 ALT.0	500017			AIR LOCK FOR FEED WATER MAKE-UP VALVE
28		W-114	1	1½"	1500° FLGD.	STAIN. STL. STELLITED	CAST STEEL	DIAPH. CONTROL VALVE WITH MOORE PRESS. TRANS. NULLMATIC CONTROLLER & AIR REDUCING VALVE W/FILTER	LESLIE FIG. NO. DOUS DRWG. NO. 102-7188-08 ALT.0	500018	1560-421-1531-X4650		PORT FD. PUMP RECIRC. VALVE
29	⊗	W-112	1	2"				DIAPH. CONTROL VALVE W/POSIT. TRANSDUCER AND 3 WAY DIAPHRAGM VALVE AND AIR SET	FISHER TYPE 657-HJ DRWG. NO. LB744	500087	1560-913-1502-W4650		MAIN FD. PUMP DISCH. TO BOILER-PORT
30	⊗	W-112	1	2"						500087			-STBD.
31	⊗	D-134	1	1"	300°	STELLITE	CHROME MOLY	CONTROL VALVE F.I.D. W/MICRO SWITCH SOLENOID VALVE AND AIR REDUCING VALVE & STRAINER	LESLIE FIG. NO. DOS DRWG. NO. 69-8472 ALT. 1	500002	1560-610-1512-W4650		AUTOMATIC DRAIN VALVE
32	⊗	GS-105	1	1"	300°	STAIN. STL. STELLITE	CAST STEEL	DIAPH. CONTROL VALVE F.I.D. W/CONTROL PILOT AND AIR REDUCING VALVE & STRAINER.	LESLIE FIG. NO. DOS DRWG. NO. 10/1.4.3.1 ALT.4	500002		STEAM	GLAND SEAL STM. SUPPLY TO MAIN PROPULSION
33	⊗	GS-106	1	2½"	150°				LESLIE FIG. NO. DDS-4 DRWG. NO. 10/3.4.1.4 ALT.1	500002			GLAND SEAL EXCESS STEAM DUMP
34													
35		V-9	1	1"	150°	STAINLESS STEEL	CAST BRONZE	DIAPH. CONTROL VALVE, W/TEMP. PILOT AND AIR REDUCING VALVE W/FILTER	LESLIE FIG. NO. DDL-3 DRWG. NO. 101-4078-17 ALT.0	500016	1560-310-1527-X4650	FRESH WATER	HOT WATER SUPPLY TO CARGO OIL TANK HEATER FROM NO.1 PORT TK.
36		V-9	1	1"						500016			NO.1 STBD. TK.
37		V-4	1	1½"					LESLIE FIG. NO. DDL-3 DRWG. NO. 101-5242-15 ALT.0	500016			NO.2 PORT TK.
38		V-4	1	1½"						500016			NO.2 STBD. TK.
39		V-5	1	1"					LESLIE FIG. NO. DDL-3 DRWG. NO. 101-4078-17 ALT.0	500016			NO.1 D.B. TK.
40		V-10	1	1"						500016			NO.2 D.B. TK.
41		V-26	1	1"						500016			NO.3 PORT TK.
42		V-26	1	1"						500016			NO.3 STBD TK.
43		V-7	1	1"						500016			NO.3 D.B. TK.
44		E-139	1	2½"		STAIN. STL. STELLITE		DIAPH. CONTROL VALVE W/CONTROL PILOT AND AIR REDUCING VALVE W/FILTER	LESLIE FIG. NO. DL-3 DRWG. NO. 101-6103-11 ALT.0	500020	1560-309-1515-X4650	STEAM	STEAM SUPPLY TO DISTILLING PLANT
45	⊗		1	4"		MONEL		DIAPH. CONTROL VALVE W/TEMP. PILOT AND AIR REDUCING VALVE AND STRAINER	LESLIE FIG. NO. DDL-3JX DRWG. NO. 10 1.4.4.3	500005	1560-812-1503-W4650	SALT WATER	SALT WATER FEED HEATER TEMP. CONTROL
46		AC-107	1	4"				REDUCING VALVE-125PSI TO 35PSI	LESLIE FIG. NO. WWBN DRWG. NO. 305-8356-11 ALT.0	500018	1560-421-1531-X4650		EMERGENCY SUPPLY TO SALT WATER SERVICE SYS. FROM FIREMAIN
47	⊗	AC-167	1	1"	SCREWED			DIAPHRAM CONTROL VALVE		500047	1560-720-1510-W4650		CARGO DEHUMIDIFICATION UNIT COOLING WATER SUPPLY
48	⊗	AC-157	1	4"	150° FLGD.	BRONZE		WATER REGULATING VALVE	PENN CONTROLS INC. MODEL NO. PLR-V43-16	500026-A	1560-624-1514-W4650		CARGO REFRIGERATION COND. COOLING WATER DISCH-NO.1
49	⊗	AC-157	1	4"						500026-A			NO.2
50	⊗	AC-157	1	4"						500026-A			NO.3
51	⊗	AC-157	1	4"						500026-A			NO.4
52	⊗	AC-140	1	4"						500026-A			NO.5
53	⊗	AC-140	1	4"						500026-A			NO.6
54	⊗	AC-140	1	4"						500026-A			NO.7
55	⊗	AC-140	1	4"						500026-A			NO.8
56	⊗	AC-142	1	3"					PENN CONTROL INC. MODEL NO. PLR-V43-13	500028	1560-624-1512-W4650		A/C UNIT CONDENSER COOLING WATER DISCHARGE-NO.1
57	⊗	AC-142	1	3"						500028			-NO.2
58	⊗	AC-143	1	2½"					PENN CONTROLS INC. MODEL NO. PLR-V46-4	500026	1560-624-1513-W4650		SHIPS STORES REFRIG. COND. COOLING WATER DISCH.-NO.1
59	⊗	AC-143	1	2½"						500026			NO.2
60	⊗	AC-158	1	2"					PENN CONTROLS INC. MODEL NO. PLR-V46-4	500026-A	1560-624-1514-W4650		CARGO PUMPOUT CONDENSER COOLING WATER DISCHARGE
61		DO-110	1	1"		MONEL		REDUCING VALVE	LESLIE FIG. NO. WWLBN DRWG. NO. 305-7649-20 ALT.0	500018	1560-421-1531-X4650	DIESEL OIL	D.O. SUPPLY TO PORT AND STBD. BOILER
62	⊗	FO-127	1	1	300° FLGD.	STAIN. STL. STELLITE	FORGED STEEL	WITH POSITIONER & AIR SET	CAMFLEX II MOD. NO. 35-35202	500087	1560-913-1502-W4650	FUEL OIL	F.O. SERVICE PUMP RECIRC.-BYPASS
63	⊗	FO-128	1	1"	300° FLGD	STAIN. STEEL	FORGED STEEL	WITH POSITIONER & AIR SET	CAMFLEX II MOD. NO. 35-35202	500087			COMBUSTION CONTROL VALVE-PORT BOILER
64	⊗	FO-128	1	1"		—	—			500087			-STBD. BOILER
65		L-100	1	4"	150° FLGD.	STAIN. STEEL	BRASS		ROBERSHAW CONTROLS DRWG. 5150-R/51474-R	50016-A	1560-729-1534-X4650	LUBE OIL	TURBINE LUBE OIL TEMP. CONTROL
66		L-127	1	2½"	150° FLGD	STAIN. STL. STELLITE	CAST STEEL		LESLIE FIG. NO. DDLS-1 DRWG. NO. 101-6590-34 ALT.0	600018	1560-421-1531-X4650		LUBE OIL TO TURBINE BEARINGS OVERPRESSURE CONT. VALVE
67		V-57	1	½"	150° FLGD	STAINLESS STEEL	CAST BRONZE		LESLIE FIG. NO. LA-5 DRWG. NO. 303-1703-02 ALT.0	500018		AIR	S.S. AIR SUPPLY TO CONTROL AIR SYSTEM 150/85 PSIG
68		V-13	1	¾"	150° FLGD.	STAINLESS STEEL	CAST BRONZE	REDUCING VALVE	LESLIE FIG. NO. LA-5 DRWG. NO. 303-1705-02 ALT.0	500018			AIR SUPPLY TO PNEUMATIC OPERATED VALVES 150/110 PSIG
69	⊗	V-14	1	¼"				REDUCING VALVE	LESLIE FIG. NO. ATMO-A-1	500030-A	1560-302-1502-X4650		SEWAGE EJECTOR REDUCING VALVE 110/22 PSIG
70	⊗	V-24	1	½"				3 WAY DIAPHRAGM CONTROL VALVE	CLOW CORP. DRWG 895748	500030-A			

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VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-9

Oct 1980 8X

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LIST OF CONTROL VALVES

	ITEM NO.	SEE GEN. NOTE NO.1	VALVE NO.	QTY	SIZE	TYPE END CONN.	TRIM MATERIAL	BODY MATERIAL	TYPE	MANUFACTURER'S FIG. NO. AND OR DRWG. NO.	REQUISITION NO.	PURCHASE ORDER △5 NO.	FLUID MEDIUM	SERVICE	REMARKS	MATERIAL LIST DRAWING NO.	PIPING DIAGRAM REF. NO.	ITEM NO.
△1	71		V-15	1	1½"	300# FLGD.	STAIN. STL. STELLITE	CAST BRONZE	TEMPERATURE REGULATOR WITH BRASS ELEMENT	LESLIE FIG. NO. GTB-4 DRWG. NO. 602-5893-05A17A	500016	1560-310-1527-X4650	STEAM	STM. TO HTG. COILS IN UPPER F.O. TANK 16 P		M-4650-375-05-9	4	71
	72		V-15	1	1½"	↓	↓	↓	↓	↓	500016	↓	↓	16 S		↓	4	72
	73		V-15	1	1½"	↓	↓	↓	↓	↓	500016	↓	↓	LOWER 16 P		↓	4	73
△1	74		V-15	1	1½"	↓	↓	↓	↓	↓	500016	↓	↓	16 S		↓	4	74
	75	⊗		1	1¼"	600# FLGD.	STAIN. STL. STELLITE	CAST STEEL	DIAPHRAM CONTROL VALVE	LESLIE FIG. NO. 005 DRWG. NO. 10 1.4.3.1	500012-C	1560-617-1506-W4650	FRESH WATER	MAIN FEED PUMP NO. 1 RECIRC.	ACTUATOR: S.S ALUM. SPRING	M-4650-372-11-1	6	75
	76	⊗		1	1¼"	↓	↓	↓	↓	↓	500012-C	↓	↓	NO. 2	↓	↓	6	76
△2	77		V-35	1	¼"	SCREWED	ALUMINUM	ALUMINUM.	AIRMATE PANEL LOADER WITH AIR GAGE & FILTER	LESLIE FIG NO. PF-2	505900-J	1560-616-1521-Y4650	AIR	AIR TO AFT FUEL OIL TRANSFER MAIN MODULATING VALVE PILOT		M-4650-371-01-1	17	77
△2	78		V-35	1	¼"	↓	↓	↓	↓	↓	505900-J	1560-616-1521-Y4650	↓	FWD.		↓	17	78
△1	79												↓					79
△1	80												↓					80
△2	81		F-19	1	½"	SCREWED	BRONZE	CAST BRONZE	AIR REDUCING VALVE WITH AIR GAGE, FILTER, & STRAINER	KING-GAGE MODEL# 72	509025	1560-929-1507-W4650	↓	AIR TO TANK LEVEL INDICATING PANEL NO. 1 26'-0" FLAT		M-4650-412-18	17	81
△2	82		F-19	1	½"	↓	↓	↓	↓	↓	↓	↓	↓	NO. 2		↓	17	82
△2	83		F-19	1	½"	↓	↓	↓	↓	↓	↓	↓	↓	NO. 3		↓	17	83
△2	84		F-19	1	½"	↓	↓	↓	↓	↓	↓	↓	↓	NO. 4 WHEELHOUSE		↓	17	84
	85	⊗		1	¼"	↓	ALUMINUM	ALUMINUM	AIRMATE WITH FILTER	LESLIE FIG. NO. AF-2	500047	1560-720-1510-W4650	↓	AIR TO CARGO DEHUMIDIFICATION STEAM & S.W. CONT. VLV. PILOT		M-4650-371-01-1	17	85
△1	86		AC-165	1	1¼"	↓	—	—	TEMPERATURE REGULATOR	TRERICE MOD# 91600	50053-A	1560-728-1528-W4650	↓	S.W. TEMP. REG. TO S.S. DIESEL GEN.		M-4650-372-02-5	11	86
△1	87		PW-25	1	3"	150# FLGD.	BRONZE	CAST BRONZE	↓	ROBERTSHAW 1-1285-D-21	↓	↓	↓	F.W. TEMP. REG. TO S.S. DIESEL GEN.		M-4650-183-11-4	18	87
△2 △1	88		V-27	2	½"	400# SCRD.	BRONZE	BRONZE	SMALL FLOW PILOT OPERATED PRESSURE REDUCING VALVE	LESLIE CLASS JAL-2	505900-J	1560-616-1521-Y4650	↓	150#/35# AIR TO BLR OBVS. DOORS PORT & STBD		M-4650-371-01-1	17	88
	89	⊗	—	1	¼"	SCREWED	ALUMINUM	ALUMINUM	AIRMATE WITH FILTER	LESLIE FIG. NO. AF-2	500002	1560-610-1512-W4650	↓	AIR TO GLAND SEAL STM. SUPPLY TO MAIN PROPULSION		M-4650-371-01-1	17	89
	90	⊗	—	1	¼"	↓	↓	↓	↓	↓	↓	↓	↓	AIR TO GLAND SEAL EXCESS STEAM DUMP		↓	17	90
	91	⊗	—	1	¼"	↓	↓	↓	↓	↓	↓	↓	↓	AIR TO AUTOMATIC DRAIN VALVE		↓	17	91
	92	⊗	—	1	¼"	↓	↓	↓	↓	↓	500087	1560-913-1502-W4650	↓	AIR TO CONTROL DESUPERHEATER OUTLET TO SUPERHEATER INLET-PORT I/P		↓	17	92
	93	⊗	—	1	¼"	↓	↓	↓	↓	↓	↓	↓	↓	-STBD I/P		↓	17	93
△2 △1	94		V-11	1	½"	SCREWED	BRONZE	BRONZE	400# SCRD. SMALL FLOW, PILOT OPERATED PRESS. REDUCING VALVE	LESLIE CLASS JAL-2	505900-J	1560-616-1521-Y4650	↓	150#/20# AIR TO BOILER TEMP. PROBE		↓	17	74
△2 △1	95		V-12	1	¼"	↓	↓	↓	200# SMALL FLOW, PRESSURE REDUCING VALVE	LESLIE CLASS AWG	↓	1560-616-1521-Y4650	↓	70#/45# AIR TO MAIN FEED PUMP SPEED CONTROL GOV.		↓	17	95
	96	⊗	—	2	¼"	SCREWED	ALUMINUM	ALUMINUM	AIRMATE WITH FILTER	LESLIE FIG. NO. AF-2	500087	1560-913-1502-W4650	↓	AIR TO FORCED DRAFT BLOWER INLET VANE & TRANSDUCER-PORT		↓	17	96
	97	⊗	—	2	¼"	↓	↓	↓	↓	↓	↓	↓	↓	-STBD		↓	17	97
	98		—	1	¼"	↓	↓	↓	↓	↓	500018	1560-421-1531-X4650	↓	AIR TO MAIN FEED PUMP NO. 1 RECIRC. CONTROL VALVE		↓	17	98
	99		—	1	¼"	↓	↓	↓	↓	↓	500018	↓	↓	NO. 2		↓	17	99
△1	100	⊗	—	1	¼"	↓	↓	↓	↓	↓	500087	1560-913-1502-W4650	↓	AIR TO F.O. BURNER SHUT-OFF VALVES AIR REGISTER & ING. ACT.-PORT		↓	17	100
△1	101	⊗	—	1	¼"	↓	↓	↓	↓	↓	↓	↓	↓	-STBD		↓	17	101
△2 △1	102		V-7	1	½"	200 SCRD	BRONZE	BRONZE	SMALL FLOW COMBINED PRESS. REDUCING & RELIEF VALVE WITH HANDWHEEL AND GAGE RELIEF VALVE SET @ 95 PSI	LESLIE CLASS AWRG	505900-J	1560-616-1521-Y4650		150#/90# AIR TO BOW THRUSTER CONTROLS		M-4650-371-01-9	17	102
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	ITEM NO.	SEE GEN. NOTE NO.1	VALV NO.
	1	⊗	S-10
	2	⊗	—
△1	3		AS-12
△1	4		AS-12
	5	⊗	AS-12
△1	6		AS-12
△1	7		AS-12
	8	⊗	AS-12
	9		
△1	10		E-124
	11		E-125
	12		E-126
△1	13		E-127
	14	⊗	S-109
	15	⊗	AS-12
△1	16	⊗	W-113
△1	17	⊗	W-113
△1	18		AW-122
	19		AW-123
	20		AW-124
	21		AW-125
	22	⊗	AW-126
	23	⊗	AW-127
	24		AW-128
	25		AW-141
	26		AW-129
	27		AW-130
	28		W-114
	29	⊗	W-112
	30	⊗	W-112
	31	⊗	D-13
	32	⊗	[illegible]
△1	33	⊗	[illegible]
	34		
△1	35		V-7
	36		V-9
	37		V-4
	38		V-4
	39		V-5
	40		V-10
	41		V-26
	42		V-26
	43		V-7
△1	44		E-139
	45	⊗	
3▷ △1	46		AC-107
	47	⊗	AC-167
	48	⊗	AC-157
	49	⊗	AC-157
	50	⊗	AC-157
	51	⊗	AC-157
	52	⊗	AC-140
	53	⊗	AC-140
	54	⊗	AC-140
	55	⊗	AC-140
	56	⊗	AC-142
	57	⊗	AC-142
	58	⊗	AC-143
	59	⊗	AC-143
	60	⊗	AC-158
△1	61		DD-110
	62	⊗	FO-127
	63	⊗	FO-128
	64	⊗	FO-128
△1	65		L-100
	66		L-127
	67		V-57
△1	68		V-13
	69	⊗	V-14
	70	⊗	V-24

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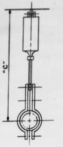
FRAME 3 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-180-4

Oct 1980 8X

FRAME 1 OF 4



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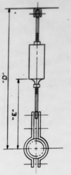

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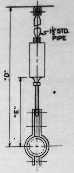


TYPE NO. 1

MATERIAL LIST

ALT. NO.	ITEM NO.	QTY	MAT'L	SPEC.	DESCRIPTION	REMARKS	REQ. NO.
	1	5'-0"	STEEL	ABS GR. A	10" X 15.3# CHANNEL	CUT TO SUIT	*
	2	13'-0"			6" X 4" X 3/8" ANGLE		*
	3	28'-0"			5" X 3 1/2" X 3/8" ANGLE		* *
	4	10'-0"			3" X 3" X 3/8" ANGLE		*
	5	7'-0"			W 10" X 25#		*
	6	3'-0"			WT 12" X 42#		*
	7	8'-0"			W 6" X 12#		*
	8	3'-0"		A-53 TY. "E" OR "S"	3" X-HVY PIPE		508744
	9	2		A519 GR. 1015, H.F.	8" PIPE SLEEVE 3" LG.	EF-496 FIG. NO. 2	UAO
	10	4	CAST IRON	COMM'L	PIPE ROLL STAND - FOR 8"-10" PIPE	GRINNELL FIG. 271	508780
△1	11	4	STEEL	A-387 GR. 11 CL. 1	PROTECTION SADDLE	SEE DETAIL "8B"	*
	12	16		A307 GR. B	1/2" DIA. HEX. HD. BOLTS W/ HEX. NUTS (4 1/2" LG.)		508730
	13	8			3/4" (2" LG.)		508730
	14	4		ABS GR. A	1/2" PL 8 5/8" X 6 5/8"		*
	15	2		A519 GR. 1015, H.F.	3 1/2" PIPE SLEEVE 3/8" LG.	EF-496 FIG. NO. 1-MOD.	UAO
△1	16	1		A-387 GR. 11 CL. 1	1/2" PL 18" X 34"	FOR ITEM 11 CUT TO SUIT	*
	17	1		A-515 GR. 55	3/4" PL 10" X 17"	CUT TO SUIT SEE DET. PS-8 & PS-9	*
	18	4		A-193 GR. B-16	1 3/8" DIA. STUDS (8 UN-2A) 9 1/2" LG ANSI B1.1	FOR USE WITH PS-8 & PS-9	508742-A
	19	8		A-194 GR. 3	1 3/8" HEX NUTS	VENDOR FURNISHED	500002
△1	20	2	FORG. STL	A-105	CLEVIS W/PIN FOR 7/8" ROD	GRINNELL FIG. 299	508780
	21	1	STEEL	A-515 GR. 55	1/2" PL 8" X 12"	SEE PS-10	*
△4 6	22	12'-0"		A-53 TY. "E" OR "S"	2" PIPE SCH. 80		508744-A

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	10-12-77	B/M	1. REVISED SPEC. ON ITEM 11 WAS COMM'L, ITEM 16 WAS A-515 GR. 55 & ITEM 17 WAS ABS GR. A.		S.G. SHARP LTR. DATED 2-9-78
		B/M	2. ADDED MAT'L SPEC. TO ITEMS 20 & 21.		
		3	3. REVISED BRACKET NO. ON SPRING HGR. SH-26 & SH-27 WAS PS-1.	WAN	
2	2-17-78	5	1. REVISED "A" DIM. & STRUCTURAL LOCATION OF SSB-1 & SSB-2	WAN	
3	5-10-78	ALL	1. ADDED OPTICAL DETAIL MARKS		
		4	2. SH-1 THRU SH-8 REVISED HOT & COLD POSITIONS, ACTUAL LOAD AND THERMAL RISE.		
		4	3. SH-6 REVISED HANGER SIZE.		
		4	4. SH-1 & SH-5 REVISED FORE & AFT LOCATION.		
		4	5. SH-9 THRU SH-19 REVISED ACTUAL LOAD AND OR THERMAL RISE.		5-18-78
		6	6. RH-2 THRU RH-4 REVISED LOAD.		
		6	7. DELETED RH-1. (NOW SH-32)		
		4	8. ADDED HANGER SH-32.	WAN	
4	10-19-79	4	1. REVISED SH-4 PER VIS 4650-22-287.		
		5	2. REVISED STRUCTURAL LOCATION & PIPE CLAMP LOCATION OFF ℄ ON SWAY BRACE SSB-7 WAS 18" OFF ℄ STBD.		
		5	3. REVISED STRUCTURAL LOCATION & PIPE CLAMP LOCATION FWD-AFT OF FR. ON SWAY BRACE SSB-4 WAS 9" FWD FR. 170.		12-3-79
		5	4. ADDED SWAY BRACES SSB-18 AND SSB-19 PER VIS 4650-22-371		
		4	5. REVISED "B" DIM. OF HANGER SH-4 WAS 2'-10"		
		5	6. ADDED SWAY BRACES SSB-20 SSB-21, ITEM 22, AND DET. "10A"	WAN	

G HANGERS

SPRING HANGER FIG. NOS. & DATA FROM GRINNELL CO. INC. CAT. PH-76

"E"	BRACKET NO.	COLD POSIT. LOAD	COLD POSIT. SCALE	HOT POSIT. LOAD	HOT POSIT. SCALE	LOAD SUPP'D	THERM. RISE	PIPE NO. & SIZE	PORT OFF ℄	STBD OFF ℄	FORE OR AFT OF FRAME	ELEV. TO ℄ CLAMP	ELEV. TO UP CONN.	
18"		416#	3/8"	504#	1/2"	506#	-.139	S-4-1 4"		7'-6"	1 5/8" FWD 173	32'-0"	44'-10"	
	PS-4	1969#	7/16"	2419#	15/16"	2406#	-.483	S-2-2 8"		11'-1 3/4"	19 3/8" FWD 174	22'-9"	24'-8 3/8"	
		1203#	9/16"	1430#	1"	1426#	-.457	S-2-2 8"		15'-8"	19 13/16" FWD 174	22'-9"	25'-0"	
	PS-2	1764#	27/32"	1929#	1 3/32"	3857#	-.287	S-2-1 8"		19'-3"	9 1/4" AFT 169	22'-9"	25'-6"	
18"		525#	0"	563#	1/8"	559#	-.138	S-4-1 4"	7'-6"		1 5/8" FWD 173	32'-0"	44'-10"	
	PS-4	1688#	1/8"	2138#	5/8"	2128#	-.472	S-2-1 8"	11'-1 3/4"		19 3/8" FWD 174	22'-9"	24'-8 3/8"	
		1073#	5/16"	1235#	5/8"	1238#	-.330	S-2-1 8"	22'-0"		19 3/8" FWD 174	22'-9"	25'-0"	
	PS-2	3263#	31/32"	3563#	1 7/32"	3566#	-.254	S-2-2 8"	23'-4 1/2"		18" FWD 172	22'-9"	25'-6"	
	PS-2	1365#	7/8"	1252#	21/32"	1251#	.200	S-1- 10"		10'-0"	17 1/16" FWD 165	22'-0 7/16"	25'-6"	
	PS-2	1333#	13/16"	1219#	19/32"	1215#	.203	S-1- 10"		15 1/4"	FR. 164	22'-8"	25'-6"	
	PS-3	750#	1/8"	925#	9/16"	936#	-.442	S-3-1 5"		11'-3"	11 1/2" AFT 171	22'-9"	25'-7"	
	PS-3	405#	21/32"	473#	1 1/16"	469#	-.399	S-3-1 5"		9'-7 1/4"	12" AFT 168	22'-9"	25'-7"	
		220#	19/32"	264#	1 1/16"	264#	-.460	S-3-1 5"		2'-4"	12" AFT 168	22'-9"	25'-4"	
		448#	1/4"	560#	3/4"	562#	-.483	S-3-1 5"	7'-2"		12" AFT 168	22'-9"	25'-4"	
	PS-3	303#	21/32"	347#	1"	350#	-.366	S-3-2 5"	17'-0"		12" AFT 168	22'-9"	25'-7"	
	(2) PS-6	323#	13/16"	323#	13/16"	639#	.004	S-3-5 5"	27'-0"		2" AFT 170	24'-6"	25'-7"	
	PS-5	616#	2"	546#	1 3/8"	1086#	.638	S-3-3 5"	22'-7 13/16"		15" AFT 169	33'-6"	35'-7"	
	PS-2	1679#	23/32"	1552#	17/32"	1560#	.190	S-3-2 5"	14'-9"		FR. 166	33'-6"	35'-6"	
	(2) PS-3	311#	23/32"	276#	7/16"	554#	.280	S-3-1 5"	22'-6"		6" AFT 165	33'-10 1/2"	35'-7"	
		305#	1/16"	373#	15/32"	743#	-.418	S-3-1 5"	3'-8"		5 5/8" FWD 176	23'-4 5/16"	24'-1 1/2"	
		305#	1/16"	373#	15/32"	743#	-.418	S-3-1 5"		3'-8"	5 5/8" FWD 176	23'-4 5/16"	24'-1 1/2"	
		722#	21/32"	844#	1 1/16"	841#	-.411	S-3-2 5"	5'-4 1/2"		FR. 179	23'-4 5/16"	21'-8 3/4"	
		722#	21/32"	844#	1 1/16"	841#	-.411	S-3-2 5"		5'-4 1/2"	FR. 179	23'-4 5/16"	21'-8 3/4"	
	PS-1	1552#	17/32"	1764#	27/32"	1767#	-.320	S-3-4 5"	2'-0"		FR. 177	23'-4 5/16"	25'-7 1/2"	
	PS-1	1552#	17/32"	1764#	27/32"	1767#	-.320	S-3-4 5"		2'-0"	FR. 177	23'-4 5/16"	25'-7 1/2"	
	PS-11	497#	15/32"	546#	11/16"	541#	-.219	S-3-4 5"	19 1/2"		12" FWD 179	23'-4 5/16"	25'-7 1/2"	
	PS-11	497#	15/32"	546#	11/16"	541#	-.219	S-3-4 5"		19 1/2"	12" FWD 179	23'-4 5/16"	25'-7 1/2"	
	PS-7	553#	1 7/16"	504#	1"	503#	.473	W-2 8"	14"		9 9/16" FWD 164	20'-9 1/2"	25'-7"	
18"		1870#	1"	1870#	1"	1865#	-.011	W-2 8"		2'-11 1/2"	5 3/8" AFT 164	18'-0"	24'-9 1/2"	OMIT CLAMP & ROD EYE - SEE DET PS-8
18"		1333#	1 5/8"	1105#	3/4"	1099#	.875	S-12-1 6"	12'-5"		12" AFT 179	49'-11 15/16"	57'-2"	OMIT CLAMP & ROD EYE - SEE DET. "9B"
18"		1333#	1 5/8"	1105#	3/4"	1099#	.875	S-12-1 6"		12'-5"	12" AFT 179	49'-11 15/16"	57'-2"	
	PS-3	420#	1/8"	448#	1/4"	445#	-.125	S-2- 8"		14'-0"	12" FWD 168	22'-9"	25'-7"	

GENERAL NOTES

1. SUPPORT WELDS ARE TO BE 1/4" UNLESS OTHERWISE SPECIFIED.
2. WHERE SUPPORTS ARE ATTACHED TO SHIPS STRUCTURE WELDS ARE TO BE 5/16" UNLESS OTHERWISE SPECIFIED.
3. APPROXIMATE POSITION OF SPRING HANGERS, ROD HANGERS & SWAY BRACES ARE INDICATED ON PIPING ARRG'T DRAWINGS. LOCATIONS MAY BE SHIFTED A REASONABLE AMOUNT TO SUIT CONDITIONS ON SHIP.
4. ONE ROD ON EACH SPRING HANGER, ROD HANGER & SWAY BRACE IS TO BE SUPPLIED APPROX. 3" LONGER THAN NECESSARY. REQUIRED AMOUNT TO BE CUT FOR PROPER FIT AT TIME OF INSTALLATION.
5. ALL PARTS OF ASSEMBLIES ARE TO BE MANUFACTURERS STANDARD.
6. SPRING HANGERS, ROD HANGERS & SWAY BRACE ASSEMBLIES BY MANUFACTURER.
7. ALL BRACKETS, SUPPORTING STRUCTURE ETC. BY BETH. ST'L CORP.
8. SPRING HANGERS TO BE PRE-LOADED TO COLD POSITION LOAD. HOT & COLD LOAD POSITION TO BE INDICATED ON TRAVEL SCALE.
9. VARIATION IN SUPPORTING FORCE LIMITED TO 25%.
10. SUPPORT & HANGER COMPONENTS TO CONFORM TO LATEST REQUIREMENTS OF ASA CODE FOR PRESSURE PIPING B-31-1 & MSS STD PRACTICE SP-58.
11. MAXIMUM OPERATING TEMPERATURE 955°.
12. SPRING LOADED SWAY BRACES ARE TO BE OF THE SINGLE ADJUSTMENT TYPE.
13. EQUIPMENT FURNISHED SHALL HAVE ONE COAT OF INORGANIC ZINC PAINT NO. 2410/11 OF INTERNATIONAL PAINT CO. OR EQUAL.
14. WELDING OF PIPE ANCHORS OR SPRING HANGER CLIPS TO CHROME-MOLY PIPE SHALL BE TO THE REQUIREMENTS FOR WELDING CHROME-MOLY PIPE.

UAO-50159

REQ'N. 22-508780
22-508780-B (SSB-20 & 21)

NO.	PLAN NO.	TITLE

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 180

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 3 OCT. 1977
DRAWN W. A. NOETZEL
APPROVED
TRACED
APPROVED
CHECKED FTG
APPROVED HBK

PLAN NO. M-4650-180-4
ALT. NO. 4

SPRING HANGERS, ROD HANGERS & SWAY BRACES FOR MAIN STEAM PIPING

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-3-77				
A.B.S.	11-30-77				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

4650-51
4650-51
4650-51 REPL.
4650-51 REPL.
4650-51 REPL.

		DATE OF ISSUE				
	ALTERATION	0	1	2	3	4
	ENGINEERING DISTRIBUTION	10-31-77	12-28-77	4-5-78	5-31-78	12-6-79
MAIL	OWNERS	5	5	3	3	3
	AMERICAN BUREAU	3				
	LLOYD'S R.S.					
	U.S.M.A.					
	U.S. NAVY					
	U.S.C.G.					
	JOINER CONT'R.					
	VENDOR	4				
INSPECTION	OWNER'S INSP.		1	1	1	1
	AM. BU. INSP.					
	LLOYD'S INSP.					
	U.S.M.A. INSP.		1	1	1	1
	U.S. NAVY INSP.					
	U.S.C.G. INSP.					
OFFICE	HULL DRAFT.-21	1	1	1	1	1
	MACH. DRAFT.-22	2	2	2	2	2
	ELEC. DRAFT.-23	1	1	1	1	1
	OUTFIT. DRAFT.-25					
	ESTIMATING					
	DOUGHERTY-CTD	1	1	1	1	1
MISC.	PRODUCTION (BCD)					
	ORDER DEPT.					
	JOINER CONT. YARD					
	WILLIAMS-PLANNING	2				
	TOTAL ENG'R. DIST.	19	12	10	10	10
	YARD DISTRIBUTION	12-29-77	4-6-78	6-2-78	12-11-79	
YARD	UAO	1	1	1	1	
	SHIP SUPT	1	1	1	1	
	PIECE RATE-11	1	1	1	1	
	TEST DEPARTMENT					
	D. MCNAIR	1	1	1	/	
	PLANNING	1	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	2	
	35 DEPT.	2	2	2	2	
	H. LEVY	1	1	1	/	
	Q-ASSURANCE	1	1	1	/	
	NO. WAY					
	NO. WAY					
	NO. WAY					
	NO. WAY					
	STRUCT. SUPER.	2	2	2	2	
	OPTICAL DETAIL-48	2	2	2	2	
	WET DOCK					
MACH'Y & OUTFIT.	PIPE SHOP-52	4	4	4	4	
	OUTFIT. #1 PIER	1	1	1	1	
	PIPE DRAFT.-52	2	2	2	2	
	BOILER SHOP-58	2	2	2	2	
	OUTSIDE MACH.-60	1	1	1	4	
	Q-MAT'L	1	1	1	1	
	ELECTRIC SHOP-70					
	SHEET MET. SHOP-74	2	2	2	2	
	COPPER SHOP-81					
	PAINT SHOP-78	1	1	1	1	
OTHER	WELDING					
	R. MILLER				1	
	MOLD LOFT-41	1	1	1	1	
	BRACKET SHOP					
	TOTAL YARD DIST.	30	30	30	31	

4650-51-ALT. 1
4650-51-ALT. 2
4650-51-ALT. 3
ALT. 4

3 2 1

M-584

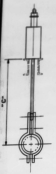
M-4650-180-4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-180-4

Oct 1980 8X

FRAME 2 OF 4



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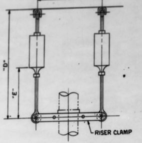

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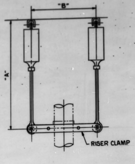

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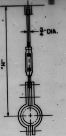

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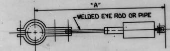
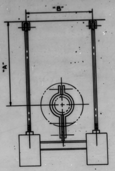


TYPE NO.6

VIBRATION CONTROL SWAY BRACE



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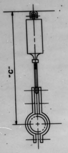

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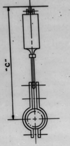

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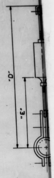


TYPE

HANGERS

…ATION …BD OFF ℄	…ATION FWD-AFT OF FR.	ELEV. ℄ CLAMP	ELEV. UP. CONN	HANG. BKT. NO	"J"	REMARKS
~~0"~~	~~12" FWD 168~~	~~22'-9"~~	~~25'-7"~~	~~PS-3~~		LOAD ~~495#~~
4"	12" FWD 168	22'-9"	24'-9$\frac{1}{2}$"			2272#
	12" FWD 168	22'-9"	25'-6"	PS-2		2140#
	12" FWD 168	22'-9"	25'-6"	PS-2		1227#
	3" AFT 178	28'-2$\frac{5}{16}$"	26'-6$\frac{1}{8}$"			766#
$\frac{1}{2}$"	3" AFT 178	28'-2$\frac{5}{16}$"	26'-6$\frac{1}{8}$"			766#

…C. SUPPORTS

…C. …AIN	DETAIL NO.	REMARKS	FURN. BY

SWAY BRACE (SPRING LOADED)

	SWAY BRACE NO	CAT. OR DWG. NO	SIZE	HANGER TYPE	"A"	STRUCTURAL LOCATION ELEV.	PORT OFF ℄	STBD OFF ℄	FWD-AFT OF FR.	HANGER BKT NO.	PIPE CLAMP LOCATION PIPE NO & SIZE	ELEV. TO ℄ CLAMP	PORT OFF ℄	STBD OFF ℄	FWD-AFT OF FR.		REMARKS
△4 6	SSB-20	CAT. PH.76	2	6	9'-2"	35'-5"		4'-0"	FR.170		4" S-4-1	33'-5"		6'-0"	3$\frac{1}{2}$" FWD FR.173	SEE DET. "10-A"	GRINNELL FIG. 297 OR 298
↓	SSB-21	↓	2	6	9'-2"	35'-5"	4'-0"		FR.170		4" S-4-1	33'-5"	6'-0"		3$\frac{1}{2}$" FWD FR.173	↓	↓

SWAY BRACE (SPRING LOADED TYPE)

	SWAY BRACE NO.	CAT. OR DWG. NO.	SIZE	HANGER TYPE	"A"	STRUCTURAL LOCATION ELEV.	PORT OFF ℄	STBD OFF ℄	FWD-AFT OF FR.	HANG. BKT. NO.	PIPE CLAMP LOCATION PIPE NO & SIZE	ELEV. TO ℄ CLAMP	PORT OFF ℄	STBD OFF ℄	FWD-AFT OF FR.		REMARKS
△2	SSB-1	CAT. PH.76	3	6	3'-6$\frac{3}{16}$"	25'-8"		4'-0"	FR.163		S-1-10"	22'-4$\frac{1}{2}$"		4'-0"	14" FWD FR.164		GRINNELL FIG. 297 OR 298
↓	SSB-2		3	6	3'-7$\frac{15}{16}$"	25'-8"		6'-0"	FR.163		S-1-10"	22'-3"		6'-0"	14" FWD FR.164		
	SSB-3		2	6	3'-0"	24'-10$\frac{1}{2}$"	2'-4"		20" AFT FR.168		S-2-1 8"	22'-9"	2'-4"		12" FWD FR.168		
△4 3	SSB-4		2	6	4'-0"	25'-7"		21'-7"	9" AFT FR.170	PS-6	S-2-1 8"	22'-9"		18'-9"	9" AFT FR.170		
	SSB-5		2	6	4'-0"	25'-7"	25'-8"		6" FWD FR.170	PS-3	S-2-2 8"	22'-9"	22'-10"		6" FWD FR.170		
	SSB-6		2	6	4'-7"	24'-10"		18"	FR.163		W-2 8"	20'-9$\frac{1}{2}$"		18"	9$\frac{5}{16}$" FWD FR.164		
△4 2	SSB-7		2	6	4'-7"	24'-10"	18"		FR.163		W-2 8"	20'-9$\frac{1}{2}$"	18"		9$\frac{5}{16}$" FWD FR.164		
	SSB-8		2	6	4'-1"	17'-1$\frac{1}{2}$"		6'-8$\frac{13}{16}$"	12$\frac{5}{16}$" AFT FR.164		W-2 8"	18'-0"		2'-11$\frac{1}{2}$"	12$\frac{5}{16}$" AFT FR.164	SEE DET. "9A"	
	SSB-9		2	6	2'-11$\frac{3}{8}$"	24'-10"		17'-10"	1" FWD FR.167		S-2- 8"	22'-9"		17'-10"	12" FWD FR.168		
	SSB-10		2	6	3'-7$\frac{7}{8}$"	25'-4"	19'-6$\frac{5}{8}$"		20" AFT FR.168		S-2-1 8"	22'-9"	19'-6$\frac{5}{8}$"		12" FWD FR.168		
	SSB-11		2	6	4'-3"	25'-9"		8'-3"	12" AFT FR.171		S-3- 5"	22'-9"		11'-3"	12" AFT FR.171		
	SSB-12		2	6	3'-5$\frac{3}{4}$"	25'-8"	19'-6$\frac{5}{8}$"		10" FWD FR.170		S-3-5 5"	24'-6"	22'-10"		10" FWD FR.170		
	SSB-13		2	6	3'-7$\frac{7}{8}$"	25'-7"	3'-0"		20" FWD FR.170		S-3-1 5"	22'-9"	3'-0"		12" AFT FR.168		
	SSB-14		2	6	5'-0"	44'-2"	11'-4"		BHD 181		S-12-1 6"	44'-2"	11'-4"		12" AFT FR.179		
	SSB-15		2	6	5'-0"	34'-6"	8'-10"		BHD 181		S-12-1 6"	34'-6"	8'-10"		12" AFT FR.179		
	SSB-16		2	6	5'-0"	44'-2"		11'-4"	BHD 181		S-12-1 6"	44'-2"		11'-4"	12" AFT FR.179		
	SSB-17		2	6	5'-0"	34'-6"		8'-10"	BHD 181		S-12-1 6"	34'-6"		8'-10"	12" AFT FR.179		
△4 4	SSB-18		2	6	4'-1$\frac{11}{16}$"	35'-6"	16'-3"		FR.163		S-3-1 5"	33'-6$\frac{7}{8}$"	16'-3"		8" AFT FR.164		
↓	SSB-19	↓	2	6	3'-10$\frac{1}{4}$"	35'-5"	11'-5$\frac{1}{2}$"		18" FWD FR.167		S-3-2 5"	33'-6"	14'-9"		18" FWD FR.167		↓

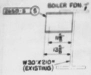
OMIT CLAMP & ROD EYE SEE PS-9

SPRING HANGERS

SPRING HANGER FIG. NOS
GRINNELL CO. INC. CAT.

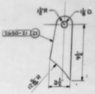
ALT. NO	HANGER ASSY. NO	HANGER SIZE	FIG. NO.	HANGER TYPE	"A"	"B"	"C"	"D"	"E"	BRACKET NO.	COLD POSIT. LOAD	COLD POSIT. SCALE	HOT POSIT. LOAD	HOT POSIT. SCALE	LOAD SUPPD	THERM RISE	PIPE & S…
△3	SH-1	7	FIG.82 TYPE "C"	1				12'-10"	18"		476#	$\frac{3}{8}$"	504#	$\frac{1}{2}$"	506#	-.139	S-
	SH-2	12	FIG.82 TYPE "D"	10			23$\frac{3}{8}$"			PS-4	1969#	$\frac{7}{16}$"	2419#	$\frac{15}{16}$"	2406#	-.483	S-
	SH-3	10	FIG.82 TYPE "B"	4			2'-3"				1203#	$\frac{9}{16}$"	1430#	1"	1426#	-.457	
△4	SH-4	11	FIG.82 TYPE "G"	5	2'-9"	2'-0"				PS-2	1764#	$\frac{27}{32}$"	1929#	1$\frac{3}{32}$"	3857#	-.287	S-
	SH-5	8	FIG.82 TYPE "C"	1				12'-10"	18"		525#	0"	563#	$\frac{1}{8}$"	559#	-.138	S-
	SH-6	12	FIG.82 TYPE "D"	10			23$\frac{3}{8}$"			PS-4	1688#	$\frac{1}{8}$"	2138#	$\frac{5}{8}$"	2128#	-.472	S-
	SH-7	10	FIG.82 TYPE "B"	4			2'-3"				1073#	$\frac{5}{16}$"	1235#	$\frac{5}{8}$"	1238#	-.330	S-
	SH-8	13	↓	4			2'-9"			PS-2	3263#	$\frac{31}{32}$"	3563#	1$\frac{7}{32}$"	3566#	-.254	S-
	SH-9	10		4			3'-5$\frac{9}{16}$"			PS-2	1365#	$\frac{7}{8}$"	1252#	$\frac{21}{32}$"	1251#	.200	S-
	SH-10	10		4			2'-10"			PS-2	1333#	$\frac{13}{16}$"	1219#	$\frac{19}{32}$"	1215#	.203	S-
	SH-11	9		4			2'-10"			PS-3	750#	$\frac{1}{8}$"	925#	$\frac{9}{16}$"	936#	-.442	S-
	SH-12	6		4			2'-10"			PS-3	405#	$\frac{21}{32}$"	473#	1$\frac{1}{16}$"	469#	-.399	S-
	SH-13	4		4			2'-7"				220#	$\frac{19}{32}$"	264#	1$\frac{1}{16}$"	264#	-.460	S-
	SH-14	7		4			2'-7"				448#	$\frac{1}{4}$"	560#	$\frac{3}{4}$"	562#	-.483	S-
	SH-15	5	↓	4			2'-10"			PS-3	303#	$\frac{21}{32}$"	347#	1"	350#	-.366	S-
	SH-16	(2) 5	FIG.82 TYPE "G"	5	13"	20"				(2) PS-6	323#	$\frac{13}{16}$"	323#	$\frac{13}{16}$"	639#	.004	S-
	SH-17	(2) 7	FIG.268 TYPE "G"	5	2'-1"	22"				PS-5	616#	2"	546#	1$\frac{3}{8}$"	1086#	.638	S-3
	SH-18	11	FIG.82 TYPE "B"	4			2'-0"			PS-2	1679#	$\frac{23}{32}$"	1552#	$\frac{17}{32}$"	1560#	.190	S-3
↓	SH-19	(2) 5	FIG.82 TYPE "G"	5	20$\frac{1}{2}$"	20"				(2) PS-3	311#	$\frac{23}{32}$"	276#	$\frac{7}{16}$"	554#	.280	S-3 5"
	SH-20	(2) 6	↓	5	9$\frac{3}{16}$"	20"					305#	$\frac{1}{16}$"	373#	$\frac{15}{32}$"	743#	-.418	S-3 5"
	SH-21	(2) 6	↓	5	9$\frac{3}{16}$"	20"					305#	$\frac{1}{16}$"	373#	$\frac{15}{32}$"	743#	-.418	S-3 5"
	SH-22	8	FIG.82 TYPE "F"	SEE DET. "7A"							722#	$\frac{21}{32}$"	844#	1$\frac{1}{16}$"	841#	-.411	S-3 5"
	SH-23	8	↓	↓							722#	$\frac{21}{32}$"	844#	1$\frac{1}{16}$"	841#	-.411	S-3 5"
	SH-24	11	FIG.82 TYPE "B"	4			2'-3$\frac{3}{16}$"			PS-1	1552#	$\frac{17}{32}$"	1764#	$\frac{27}{32}$"	1767#	-.320	S-3 5"
	SH-25	11		4			2'-3$\frac{3}{16}$"			PS-1	1552#	$\frac{17}{32}$"	1764#	$\frac{27}{32}$"	1767#	-.320	S-3 5"
△1	SH-26	7		4			2'-3$\frac{3}{16}$"			PS-11	497#	$\frac{15}{32}$"	546#	$\frac{11}{16}$"	541#	-.219	S-3 5"
↓	SH-27	7	↓	4			2'-3$\frac{3}{16}$"			PS-11	497#	$\frac{15}{32}$"	546#	$\frac{11}{16}$"	541#	-.219	S-3 5"
	SH-28	7	FIG.268 TYPE "B"	4			4'-9$\frac{1}{2}$"			PS-7	553#	1$\frac{7}{16}$"	504#	1"	503#	.473	W-2 8"
	SH-29	11	FIG.82 TYPE "C"	1				6'-9$\frac{1}{2}$"	18"		1870#	1"	1870#	1"	1865#	-.011	W-2 8"
	SH-30	10	FIG.268 TYPE "C"	1				7'-1$\frac{1}{16}$"	18"		1333#	1$\frac{5}{8}$"	1105#	$\frac{3}{4}$"	1099#	.875	S-12 6"
	SH-31	10	↓	1				7'-1$\frac{1}{16}$"	18"		1333#	1$\frac{5}{8}$"	1105#	$\frac{3}{4}$"	1099#	.875	S-12 6"
△3	SH-32	7	FIG.82 TYPE "B"	4			2'-10"			PS-3	420#	$\frac{1}{8}$"	448#	$\frac{1}{4}$"	445#	-.125	S-2 8"

6 5 4 3



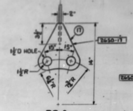
2650-3 ⑥
BOILER FDN.
$11\frac{5}{8}$"
$13\frac{5}{8}$"
W30"X210# (EXISTING)

PS-11



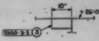
$1\frac{1}{2}$"R
$1\frac{1}{2}$"D.
2650-2-1 ㉑
$9\frac{1}{2}$"
$12\frac{3}{8}$"R
$3\frac{1}{2}$"

PS-10



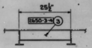
2"
⑰
2650-17
$3\frac{1}{2}$"
$1\frac{1}{2}$"D HOLE
15"
15"
$1\frac{1}{2}$"R
$6\frac{3}{8}$"R
$7\frac{3}{4}$"R
14"

PS-8



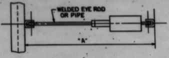
10"
26'-0" FLAT
2650-3-2 ③

PS-6



$25\frac{1}{2}$"
2650-3-4 ③

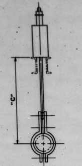
PS-3



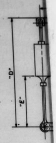
WELDED EYE ROD OR PIPE
"A"

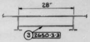
TYPE NO.12

VIBRATION CONTROL SWAY BRACE

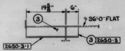


TYPE NO.10



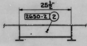


PS-7



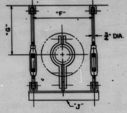
$19\frac{5}{8}$"
6"
36'-0" FLAT
③
2650-3-1
③ 2650-3

PS-5



$25\frac{1}{2}$"
2650-2 ②

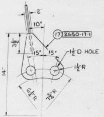
PS-2



"F"
"G"
$\frac{3}{4}$" DIA.
"J"

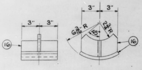
TYPE NO.11

"9-B"



2"
10"
⑰ 2650-17-1
$3\frac{1}{2}$"
15"
15"
$1\frac{1}{2}$" D. HOLE
$1\frac{1}{2}$"R
14"
$6\frac{3}{8}$"R
$7\frac{3}{4}$"R

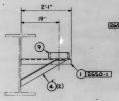
PS-9



3"
3"
3"
3"
⑯
$6\frac{3}{16}$"R
45°
$2\frac{3}{4}$"R
⑯

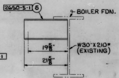
DETAIL "8-B"

⑪ PROTECTION SADDLE



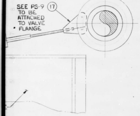
2'-1"
19"
⑨
① 2650-1
④(2)

PS-4



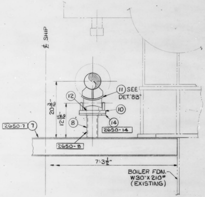
2650-5-1 ⑤
BOILER FDN.
$19\frac{5}{8}$"
$21\frac{5}{8}$"
W30"X210# (EXISTING)

PS-1



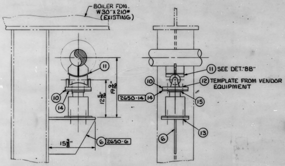
SEE PS-9 ⑰ TO BE ATTACHED TO VALVE FLANGE

DETAIL "9-A"



℄ SHIP
⑪ SEE DET."8B"
⑫
⑩
$20\frac{3}{4}$"
$12\frac{15}{16}$"
⑧
⑭
2650-14
2650-7 ⑦
2650-8
7'-$3\frac{1}{2}$"
BOILER FDN. W30"X210# (EXISTING)

DETAIL "8-A"



BOILER FDN. W30"X210# (EXISTING)
⑪
$19\frac{7}{16}$"
$12\frac{5}{8}$"
⑩
⑭
2650-14 ⑭
$15\frac{3}{8}$"
⑥ 2650-6
⑪ SEE DET."8B"
⑩
⑫ TEMPLATE FROM VENDOR EQUIPMENT
⑮
⑬
⑥

DETAIL "7-A"

ROD HANGERS

HANGER NO.	HANGER TYPE	"F"	"G"	"H"	PIPE NO & SIZE	LOCATION PORT OFF ℄	LOCATION STBD OFF ℄	LOCATION FWD-AFT OF FR.	ELEV. ℄ CLAMP	ELEV. UP. CONN	HANG. BKT. NO	"J"	REMARKS
~~RH-1~~	~~7~~			~~2'-10"~~	~~S-2-8"~~		~~14'-0"~~	~~12" FWD 168~~	~~22'-9"~~	~~25'-7"~~	~~PS-3~~		LOAD ~~495#~~
RH-2	7			2'-0$\frac{1}{2}$"	S-2-8"		2'-4"	12" FWD 168	22'-9"	24'-9$\frac{1}{2}$"			2272#
RH-3	7	-		2'-9"	S-2-1 8"	21'-0"		12" FWD 168	22'-9"	25'-6"	PS-2		2140#
RH-4	7			2'-9"	S-2-1 8"	7'-10$\frac{1}{2}$"		12" FWD 168	22'-9"	25'-6"	PS-2		1227#
RH-5	SEE DET. "8A"				S-3-3 5"	15$\frac{1}{2}$"		3" AFT 178	28'-2$\frac{5}{16}$"	26'-6$\frac{1}{8}$"			766#
RH-6					S-3-3 5"		15$\frac{1}{2}$"	3" AFT 178	28'-2$\frac{5}{16}$"	26'-6$\frac{1}{8}$"			766#

⚠3

MISC. SUPPORTS

SUPPORT NO.	PIPE NO. & SIZE	PORT OFF ℄	STBD. OFF ℄	FWD-AFT OF FR.	ELEV. ℄ CLAMP	ELEV. LOW CONN	DETAIL NO.	REMARKS	FURN

8

7

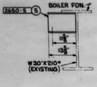
6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

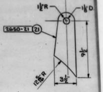
Oct 1980 8X

BUILDERS PLAN NO. M4650-180-4

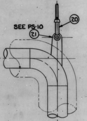
FRAME 3 OF 4


2650-5
5
BOILER FDN.
11 5/8"
13 5/8"
W30"X210#
(EXISTING)

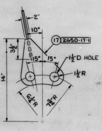
PS-11


1 1/2"R
1 1/8"D.
2650-21
21
9 1/2"
12 5/16"R
3 1/2"

PS-10

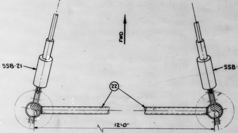

SEE PS-10
21
20

DETAIL "9-B"

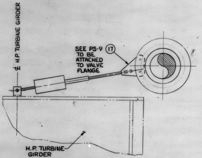

2"
10°
17
2650-17-1
3 1/2"
15°
15°
1 1/2"D. HOLE
1 1/2"R
14"
6 1/4"R
7 3/4"R

PS-9

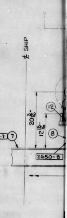
(16)


FWD
SSB-21
SSB-20
22
12'-0"

DETAIL "10-A"


℄ H.P. TURBINE GIRDER
SEE PS-9 TO BE ATTACHED TO VALVE FLANGE
17
H.P. TURBINE GIRDER

DETAIL "9-A"


℄ SHIP
20 3/16"
12 15/16"
12
8
2650-7
7
2650-8

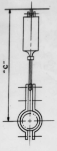
11 10 9

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-180-4

Oct 1980 8X

FRAME 4 OF 4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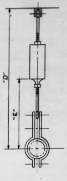
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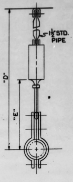

TYPE NO.1

MATERIAL LIST

ALT. NO.	ITEM NO.	QTY	MAT'L	SPEC.	DESCRIPTION	REMARKS	REQ. NO.
	1	4'-0"	STEEL	ABS GRA	WF 10"X25#	CUT TO SUIT	*
	2	3'-0"			WT 12"X42# TO CUT 8"X9" T		*
△5	3	47'-0"			4"X3½"X⅜" ANGLE		*
△1	4	25'-0"			3"X3"X⅜" ANGLE		*
	5	1		A519 GR. 1015 H.F	3" PIPE SLEEVE ⅜" LG.	EF-496 FIG. NO.1 MOD.	UAO
	6	4		A-307 GR.B	¾" DIA. HVY. HEX. HD. BOLTS W/HVY. HEX. NUTS 2" LG.	B18.2.1/B18.2.2	SUPPLY
	7	4			½" 4½" LG		
	8	1	CAST IRON	COMM'L	PIPE ROLL STAND FOR 6"-10" PIPE	GRINNELL FIG. 271	508780-A
	9	1	STEEL	ABS GRA	½" PL 9⅞"X5⅝"		CUTTINGS
△2	10	1		A515 GR.70	⅜" PL 9"X13"	SEE DET. "7B"	*
	11	1	FORGED STEEL	A-105	CLEVIS W/PIN FOR ¾" ROD	GRINNELL FIG. 299	508780-A
	12	1	SMLS. STEEL	A519 GR.1015 H.F.	6" PIPE SLEEVE 1¼" LG.	EF-496 FIG. NO.1	UAO
△5	13	2		A53 TY. E OR S GR. B	5" PIPE SLEEVE 3" LG.	EF-496 FIG. NO.1 MOD.	
	14	1	STEEL	A-105	RISER CLAMP FOR 6" PIPE	GRINNELL FIG. 261	508780-A
	15	1		ABS GRA	⅜" PL 6"X13"		CUTTINGS
	16	12'-0"			6"X10.5# CHANNEL	CUT TO SUIT	*

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	1-4-78	5 B/M	1. ADDED SWAY BRACES SBF-1 THRU SBF-4. 2. INCREASED QTY OF ITEM 4 WAS 23'-0"	WAN	G.&S. LTR DATED 3-15-78
2	3-28-78	6 B/M	1. REVISED LOCATION OF RHA-1 WAS 8'-2 5/16" OFF ℄ STBD 2. REVISED SPEC. IN ITEM 10 WAS A-515 GR.55.	WAN	G.&S. LTR DATED 5-3-78
3	4-7-78		1. ADDED OPTICAL DETAIL MARKS	WAN	
4	8-14-78	3,9	1. ON SPRING HGR. SHF-5 REVISED DIM. ON "ELEV. TO ℄ CLAMP" WAS 41'-5" AND REVISED DET. "9A" PER PIPING CHANGE.	WAN	8-30-78
5		5 5,9 3 B/M 7 B/M 5 5 9	1. ON SWAY BRACE SBF-1 & SBF-2 LOCATION FWD-AFT OF FR. FOR PIPE CLAMP WAS 7" FWD. OF FR. 171. 2. ADDED SWAY BRACES SBF-5 THRU SBF-8, AND PSA-6. 3. REVISED ELEV. TO UPPER CONN. WAS 65'-0 7/8" AND ADDED BRACKET NO. TO SPRING HGRS. SHF-8 & SHF-9. 4. REVISED DESCRIPTION OF IT. 13 WAS 6" PIPE SLEEVE 3" LG. 5. REVISED DET. "7A" TO AGREE WITH CONDITION ON SHIP. 6. INCR. QTY OF IT. 3 WAS 3'-0" 7. ADDED SWAY BRACES SBA-6 AND SBA-7. 8. ADDED SPRING LOADED SWAY BRACES SSBA-1 THRU SSBA-4 PER YIS 4650-22-608 9. ADDED PSA-7 & PSA-8	WAN	10-15-79

HANGERS

SPRING HANGER FIG. NOS. & DATA FROM GRINNELL CO. INC. CAT. PH-76

"E"	BRACKET NO.	COLD POSIT. LOAD	COLD POSIT. SCALE	HOT POSIT. LOAD	HOT POSIT. SCALE	LOAD SUPPD	THERM RISE	PIPE NO. & SIZE	PORT OFF ℄	STBD OFF ℄	FORE OR AFT OF FRAME	ELEV. TO ℄ CLAMP	ELEV. TO UP CONN.
2'-0"		347#	1¼"	315#	½"	317#	⅞"	3" AS-2-3		12'-9½"	5" FWD FR.175	49'-0 9/16"	56'-10⅜"
2'-0"	PSA-1	616#	1"	546#	11/16"	548#	5/16"	3" AS-2-3		4'-8"	13" AFT FR.173	49'-0 9/16"	55'-11 9/16"
	PSA-2	253#	15/16"	229#	11/16"	229#	¼"	2½" AS-3-6		30'-8⅜"	4¼" AFT FR.172	34'-1¼"	35'-8"
		315#	1½"	276#	⅞"	279#	21/32"	2½" AS-3-5		24'-3⅛"	12⅜" FWD FR.173	42'-6"	44'-1 7/16"
		247#	1¾"	217#	1⅛"	432#	21/32"	2½" AS-3-2		24'-3⅛"	5⅝" AFT FR.172	43'-1½"	44'-1 7/16"
2'-0"		1203#	9/16"	1073#	5/16"	1068#	7/32"	3" AS-2-4		5'-11¼"	15" FWD FR.171	47'-0"	65'-0⅞"
		750#	¾"	694#	9/16"	742#	-3/16"	3" AS-2-6		5'-0¾"	15" FWD FR.171	37'-4"	35'-9 13/16"
2'-0"		347#	1¼"	315#	½"	319#	⅞"	3" AS-2-1	12'-9½"		5" FWD FR.175	49'-0 9/16"	56'-10⅜"
2'-0"	PSA-1	378#	½"	326#	3/16"	324#	5/16"	3" AS-2-1	4'-8"		13" AFT FR.173	49'-0 9/16"	55'-11 9/16"
2'-0"		229#	2¾"	206#	1¾"	205#	⅞"	4" W-2-5		11'-2"	14⅜" AFT FR.179	47'-8 15/16"	57'-2"
2'-0"		229#	2¾"	206#	1¾"	205#	⅞"	4" W-2-5	11'-2"		14⅜" AFT FR.179	47'-8 15/16"	57'-2"
		357#	1½"	315#	½"	317#	⅞"	4" W-2-4		11'-2"	2⅜" AFT FR.176	47'-8 15/16"	52'-3"
		357#	1½"	315#	½"	317#	⅞"	4" W-2-4	11'-2"		2⅜" AFT FR.176	47'-8 15/16"	52'-3"
		311#	1 7/16"	284#	1"	568#	13/32"	6" W-1-16		℄	20½" AFT FR.171	39'-6"	43'-7¼"
		574#	3¼"	532#	2½"	1048#	¾"	4" W-2-3		7'-1	9" AFT FR.172	44'-0"	44'-6¾"
		574#	3¼"	532#	2½"	1048#	¾"	4" W-2-3	7'-4"		9" AFT FR.172	44'-0"	44'-6¾"
2'-0"	PSA-6	1700#	3"	1573#	2¼"	1575#	¾"	4" W-2-1		4'-0"	7" AFT FR.171	44'-0"	52'-0"
2'-0"	PSA-6	1700#	3"	1573#	2¼"	1574#	¾"	4" W-2-1	4'-0"		7" AFT FR.171	44'-0"	52'-0"
2'-0"	PSA-1	276#	1¾"	244#	¾"	244#	⅞"	4" W-2-4		15'-6"	15" AFT FR.173	47'-8 13/16"	55'-11 9/16"
2'-0"	PSA-1	276#	1¾"	244#	¾"	244#	⅞"	4" W-2-4	15'-6"		15" AFT FR.173	47'-8 13/16"	55'-11 9/16"
		441#	3½"	410#	2¾"	815#	¾"	4" W-2-3		11'-6"	19" AFT FR.171	44'-0"	44'-6¾"
3'-10"		863#	4½"	806#	3¾"	815#	¾"	4" W-2-3	11'-6"		19" AFT FR.171	44'-0"	56'-8½"

GENERAL NOTES

1. SUPPORT WELDS ARE TO BE ¼" UNLESS OTHERWISE SPECIFIED.
2. WHERE SUPPORTS ARE ATTACHED TO SHIPS STRUCTURE WELDS ARE TO BE 5/16" UNLESS OTHERWISE SPECIFIED.
3. APPROXIMATE POSITION OF SPRING HANGERS, ROD HANGERS & SWAY BRACES ARE INDICATED ON PIPING ARRG'T DRAWINGS. LOCATIONS MAY BE SHIFTED A REASONABLE AMOUNT TO SUIT CONDITIONS ON SHIP.
4. ONE ROD ON EACH SPRING HANGER, ROD HANGER & SWAY BRACE IS TO BE SUPPLIED APPROX. 3" LONGER THAN NECESSARY. REQUIRED AMOUNT TO BE CUT FOR PROPER FIT AT TIME OF INSTALLATION.
5. ALL PARTS OF ASSEMBLIES ARE TO BE MANUFACTURERS STANDARD.
6. SPRING HANGERS ROD HANGERS & SWAY BRACE ASSEMBLIES BY MANUFACTURER.
7. ALL BRACKETS SUPPORTING STRUCTURE ETC. BY BETH. ST'L CO.
8. SPRING HANGERS TO BE PRE-LOADED TO COLD POSITION LOAD. HOT & COLD LOAD POSITION TO BE INDICATED ON TRAVEL SCALE.
9. VARIATION IN SUPPORTING FORCE LIMITED TO 25%.
10. SUPPORT & HANGER COMPONENTS TO CONFORM TO LATEST REQUIREMENTS OF ASA CODE FOR PRESSURE PIPING B-31-1 & MSS STD PRACTICE SP-58.
11. MAXIMUM OPERATING TEMPERATURE 620°
12. SPRING LOADED SWAY BRACES ARE TO BE OF THE SINGLE ADJUSTMENT TYPE.
13. EQUIPMENT FURNISHED SHALL HAVE ONE COAT OF INORGANIC ZINC PAINT NO. 2410/11 OF INTERNATIONAL PAINT CO. OR EQUAL.

REQN. 22-508780-A

UAO-50158

NO.	PLAN NO.	TITLE

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 180

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 30 NOV. 1977
DRAWN W.A. NOETZEL
APPROVED
TRACED
APPROVED
CHECKED
APPROVED UAW

PLAN NO. M-4650-180-5
ALT. NO. 5

SPRING HANGERS, ROD HANGERS & SWAY BRACES FOR AUX. STEAM PIPING AND H.P. FEED

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-17-78				
A.B.S.	X				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

M-585

4650-51
4650-51
4650-51 REPL.
4650-51 REPL.
4650-51 REPL.
4650-51 REPL.

		DATE OF ISSUE					
	ALTERATION	0	1	2	3	4	5
	ENGINEERING DISTRIBUTION	12-13-77	2-3-78	3-30-78	5-10-78	9-6-78	10-15-79
MAIL	OWNERS	5	5	5		3	3
MAIL	AMERICAN BUREAU						
MAIL	LLOYD'S R.S.						
MAIL	U.S.M.A.						
MAIL	U.S. NAVY						
MAIL	U.S.C.G.						
MAIL	JOINER CONT'R.						
INSPECTION	OWNER'S INSP.		1	1	1	1	1
INSPECTION	AM. BU. INSP.						
INSPECTION	LLOYD'S INSP.						
INSPECTION	U.S.M.A. INSP.		1	1	1	1	1
INSPECTION	U.S. NAVY INSP.						
INSPECTION	U.S.C.G. INSP.						
OFFICE	HULL DRAFT.-21	1	1	1	1	1	1
OFFICE	MACH. DRAFT.-22	2	2	2	2	2	2
OFFICE	ELEC. DRAFT.-23	1	1	1	1	1	1
OFFICE	OUTFIT. DRAFT.-25						
OFFICE	ESTIMATING						
OFFICE	[illegible]	1	1	1	1	1	1
MISC.	PRODUCTION (BCD)						
MISC.	ORDER DEPT.						
MISC.	JOINER CONT. YARD						
MISC.	[illegible] PLANNING	2					
	TOTAL ENG'R. DIST.	13	12	12	7	10	10
	YARD DISTRIBUTION	2-3-78	3-31-78	5-11-78	9-7-78	10-17-79	
YARD	[illegible] OFFICE	1	1	1	1	1	
YARD	QUALITY ASSURANCE	1	1	1	1	1	
YARD	PIECE RATE-11	1	1	1	1	1	
YARD	TEST DEPARTMENT					5	
YARD	SHIP SUPT.	1	1	1	1	1	
YARD	PLANNING	1	1	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	2	2	
STRUCTURAL	H. LEVY	2	2	2	2	2	
STRUCTURAL	P. McNAIR	1	1	1	1		
STRUCTURAL	H. LEVY	1	1	1	1		
STRUCTURAL	NO. WAY						
STRUCTURAL	NO. WAY						
STRUCTURAL	NO. WAY						
STRUCTURAL	NO. WAY						
STRUCTURAL	STRUCT. SUPER.	2	2	2	2	2	
STRUCTURAL	OPTICAL DETAIL-45	2	2	2	2	2	
STRUCTURAL	WET DOCK						
MACH'Y & OUTFIT.	PIPE SHOP-52	4	4	4	4	4	
MACH'Y & OUTFIT.	OUTFIT. #1 PIER	1	1	1	1	1	
MACH'Y & OUTFIT.	PIPE DRAFT.-52	2	2	2	2	2	
MACH'Y & OUTFIT.	BOILER SHOP-58	2	2	2	2	2	
MACH'Y & OUTFIT.	OUTSIDE MACH.-60	1	1	1	1	1	
MACH'Y & OUTFIT.	R. MILLER					1	
MACH'Y & OUTFIT.	ELECTRIC SHOP-70						
MACH'Y & OUTFIT.	SHEET MET. SHOP-74	2	2	2	2	2	
MACH'Y & OUTFIT.	COPPER SHOP-81						
MACH'Y & OUTFIT.	PAINT SHOP-78	1	1	1	1	1	
OTHER	WELDING						
OTHER	Q-MATERIAL	1	1	1	1	1	
OTHER	MOLD LOFT-41	1	1	1	1	1	
OTHER	BRACKET SHOP						
	TOTAL YARD DIST.	30	30	30	30	28	

8-8-78

4650-51-ALT. 1
4650-51-ALT. 2
4650-51-ALT. 3
4650-51-ALT. 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-180-5

Oct 1980 8X

FRAME 1 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

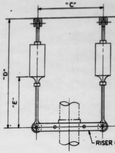
BUILDERS PLAN NO. M4650-180-5

Oct 1980

8X

FRAME 2 OF 4

O.10



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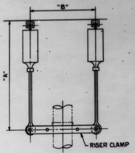

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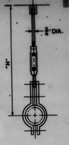

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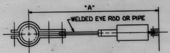
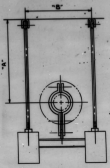


TYPE NO.6

VIBRATION CONTROL SWAY BRACE



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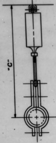

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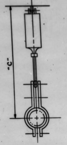

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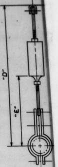


TYPE NO

S

ELEV. UP CONN	HANG. BKT. NO	"J"	REMARKS
44'-8 3/8"	PSA-5		OMIT ROD EYE & BEAM ATTACH. SEE DET. "8A"
44'-6 5/8"	PSA-3		
44'-5 3/4"			
44'-5 3/4"			
44'-6 5/8"	PSA-3		
44'-9 3/4"			
44'-8"	PSA-4		

SWAY BRACE (RIGID TYPE)

SWAY BRACE NO	HANGER TYPE	"F"	"G"	"H"	STRUCTURAL LOCATION ELEV.	PORT OFF ℄	STBD OFF ℄	FWD-AFT OF FR.	HANGER BKT NO	PIPE CLAMP LOCATION PIPE NO & SIZE	ELEV. TO ℄ CLAMP	PORT OFF ℄	STBD OFF ℄	FWD-AFT OF FR.	"J"	REMARKS
SBA-1	7			3'-10"	44'-10"		15'-8"	FR.170		2½" AS-3-5	42'-6"		15'-8"	4⅜" AFT FR.171		
SBA-2	7			2'-6"	43'-1"		16'-4"	FR.170		2½" AS-3-2	42'-6"		16'-4"	6⅛" FWD FR.171		
SBA-3	7			22"	43'-1"		12"	FR.170		3" AS-2-2	42'-6"		12"	15" FWD FR.171		
SBA-4	7			20"	35'-6"		25'-1"	8" AFT FR.173		2½" AS-3-6	35'-6"		24'-9⅛"	12⅜" FWD FR.173		
SBA-5	7			17"	47'-0"		6'-8"	FR.170		3" AS-2-4	47'-0"		6'-8"	15" FWD FR.171		
△5 SBA-6	7			3'-0"	49'-0 9/16"			3" AFT FR.173		3" AS-2-3	49'-0 9/16"		4'-8"	9" AFT FR.173		
SBA-7	7			3'-0"	49'-0 9/16"			3" AFT FR.173		3" AS-2-1	49'-0 9/16"	4'-8"		9" AFT FR.173		
△5 △1 SBF-1	7			3'-7"	44'-0"		7'-6"	FR.170		4" W-2-2	44'-0"		7'-6"	7" AFT FR.171		
SBF-2	7			3'-7"	44'-0"	7'-6"		FR.170		4" W-2-2	44'-0"	7'-6"		7" AFT FR.171		
SBF-3	7			3'-7"	36'-0"		℄	FR.170		6" W-1-15	36'-0"		℄	7" FWD FR.171		
SBF-4	11	18"	4'-8½"		36'-0"		℄	FR.170		6" W-1-16	36'-0"		℄	20½" FWD FR.171	ITEM 4	
△5 SBF-5	7			4'-2"	47'-9"		19'-7½"	FR.173		4" W-2-4	47'-9"		15'-6"	FR.173		
SBF-6	7			4'-2"	47'-9"	19'-7½"		FR.173		4" W-2-4	47'-9"	15'-6"		FR.173		
SBF-7	7			8'-6"	46'-6"		19'-7½"	FR.177		4" W-2-4	47'-9"		11'-2"	FR.177		
SBF-8	7			8'-6"	46'-6"	19'-7½"		FR.177		4" W-2-4	47'-9"	11'-2"		FR.177		

SWAY BRACE (SPRING LOADED TYPE)

SWAY BRACE NO.	CAT. OR DWG NO.	SIZE	HANGER TYPE	"A"	STRUCTURAL LOCATION ELEV.	PORT OFF ℄	STBD OFF ℄	FWD-AFT OF FR.	HANG. BKT. NO.	PIPE CLAMP LOCATION PIPE NO & SIZE	ELEV. TO ℄ CLAMP	PORT OFF ℄	STBD OFF ℄	FWD-AFT OF FR.	THERMAL MOVEMENT	REMARKS
△5 SSBA-1	CAT. PH.76	2	6	9'-6"	54'-9½"		18"	6" AFT FR.173	PSA-7	2" AS-4	45'-3⅛"		18"	6" AFT FR.173		
SSBA-2		2	6	9'-6"	54'-9½"	18"		6" AFT FR.173	PSA-7	2" AS-4	45'-3⅛"	18"		6" AFT FR.173		
SSBA-3		2	6	5'-0"	42'-5½"		9"	20½" AFT FR.171	PSA-8	2" AS-4	44'-8½"		2'-0"	20½" AFT FR.171		
SSBA-4		2	6	5'-0"	42'-5½"	9"		20½" AFT FR.171	PSA-8	2" AS-4	44'-8½"	2'-0"		20½" AFT FR.171		

SPRING HANGERS

SPRING HANGER FIG. NOS. &
GRINNELL CO. INC. CAT. PH-

ALT. NO	HANGER ASSY. NO	HANGER SIZE	FIG. NO.	HANGER TYPE	"A"	"B"	"C"	"D"	"E"	BRACKET NO.	COLD POSIT. LOAD	COLD POSIT. SCALE	HOT POSIT. LOAD	HOT POSIT. SCALE	LOAD SUPP'D	THERM RISE	PIPE NO. & SIZE
	SHA-1	6	FIG.98 TYPE "C"	1				7'-9 13/16"	2'-0"		347#	1¼"	315#	½"	317#	⅞"	3" AS-2-5
	SHA-2	7	FIG.82 TYPE "C"	1				6'-11"	2'-0"	PSA-1	616#	1"	546#	11/16"	548#	5/16"	3" AS-2-3
	SHA-3	4	FIG.82 TYPE "B"	4			18¾"			PSA-2	253#	15/16"	229#	11/16"	229#	¼"	2½" AS-3-6
	SHA-4	5	FIG.B268 TYPE "B"	4			19 7/16"				315#	1½"	276#	⅞"	279#	21/32"	2½" AS-3-5
	SHA-5	(2) 4	FIG.B268 TYPE "G"	5	12 15/16"	18"					247#	1¾"	217#	1⅛"	432#	21/32"	2½" AS-3-2
	SHA-6	10	FIG.82 TYPE "C"	1				18'-0⅞"	2'-0"		1203#	9/16"	1073#	5/16"	1068#	7/32"	3" AS-2-4
	SHA-7	8	FIG.82 TYPE "F"	SEE DET. "7A"							750#	¾"	694#	9/16"	742#	-3/16"	3" AS-2-6
	SHA-8	6	FIG.98 TYPE "C"	1				7'-9 13/16"	2'-0"		347#	1¼"	315#	½"	319#	⅞"	3" AS-2-1
	SHA-9	6	FIG.82 TYPE "C"	1				6'-11"	2'-0"	PSA-1	378#	½"	326#	3/16"	324#	5/16"	3" AS-2-1
	SHF-1	4	FIG.98 TYPE "C"	1				9'-5 1/16"	2'-0"		229#	2¾"	206#	1¾"	205#	⅞"	4" W-2-5
	SHF-2	4		1				9'-5 1/16"	2'-0"		229#	2¾"	206#	1¾"	205#	⅞"	4" W-2-5
	SHF-3	6		3			4'-6 1/16"				357#	1½"	315#	½"	317#	⅞"	4" W-2-4
	SHF-4	6		3			4'-6 1/16"				357#	1½"	315#	½"	317#	⅞"	4" W-2-4
△4	SHF-5	(2) 5	FIG.268 TYPE "E"	SEE DET. "9A"							311#	1 7/16"	284#	1"	568#	13/32"	6" W-1-16
	SHF-6	(2) 7	FIG.98 TYPE "G"	5	6¾"	18"					574#	3¼"	532#	2½"	1048#	¾"	4" W-2-3
	SHF-7	(2) 7	FIG.98 TYPE "G"	5	6¾"	18"					574#	3¼"	532#	2½"	1048#	¾"	4" W-2-3
△5	SHF-8	11	FIG.98 TYPE "C"	1				21'-0⅞"	2'-0"	PSA-6	1700#	3"	1573#	2¼"	1575#	¾"	4" W-2-1
	SHF-9	11		1				21'-0⅞"	2'-0"	PSA-6	1700#	3"	1573#	2¼"	1574#	¾"	4" W-2-1
	SHF-10	5		1				8'-2⅝"	2'-0"	PSA-1	276#	1¾"	244#	¾"	244#	⅞"	4" W-2-4
	SHF-11	5		1				8'-2⅝"	2'-0"	PSA-1	276#	1¾"	244#	¾"	244#	⅞"	4" W-2-4
	SHF-12	(2) 6	FIG.98 TYPE "G"	5	9¾"	18"					441#	3½"	410#	2¾"	815#	¾"	4" W-2-3
	SHF-13	8	FIG.98 TYPE "C"	1				12'-8½"	3'-10"		863#	4½"	806#	3¾"	815#	¾"	4" W-2-3

RTS

REMARKS	FURN. BY

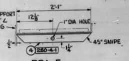
6 5 4 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

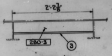
BUILDERS PLAN NO. M4650-180-5

Oct 1980 8X

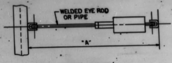
FRAME 3 OF 4


2'-1"
GRTG SUPPORT 3"X3"X1/4" ∠ EXISTING
12 1/8
1" DIA. HOLE
45° SNIPE
2 1/2
4 280-4-1
1 1/4

PSA-5

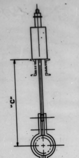


PSA 2


WELDED EYE ROD OR PIPE
"A"

TYPE NO.12

VIBRATION CONTROL SWAY BRACE



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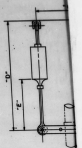
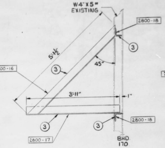
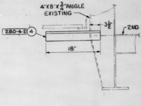


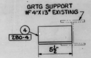
TYPE


W4"X5# EXISTING
2800-18
3
5'-1 1/2
45°
3
2800-16
3'-11"
1"
3
3
2800-18
2800-17
BHD 170

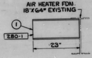
PSA-6 5


4"X8"X3/4" ANGLE EXISTING
3 1/2
2ND DK.
280-4-2 4
18"

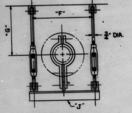
PSA-4


GRTG SUPPORT WF 4"X13# EXISTING
4
280-4
5 1/2"

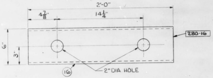
PSA-3


AIR HEATER FDN. 18"X64# EXISTING
1
280-1
23"

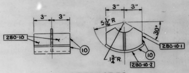
PSA-1



TYPE NO.11

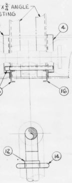

2'-0"
4 7/8
14 1/4
6"
3"
280-16
16
2" DIA HOLE

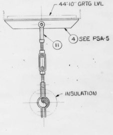
DETAIL "8-B"


3"
3"
280-10
10
3"
3"
5 1/16 R
30°
280-10-1
1 3/4" R.
10
280-10-2

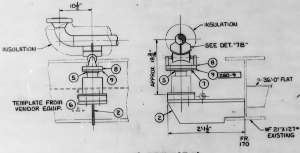
DETAIL "7-B"

PROTECTION SADDLE


X3/4" ANGLE
STING
4
16
12
14


44'-10" GRTG LVL
4 SEE PSA-5
11
INSULATION

DETAIL "8-A"


10 1/2"
INSULATION
8
5
9
TEMPLATE FROM VENDOR EQUIP.
6
2
INSULATION
SEE DET. "7B"
APPROX. 18 3/16"
8
9 280-9
5
7
36'-0" FLAT
2
2'-1 1/2"
WF 21"X127# EXISTING
FR. 170

5 DETAIL "7-A"

ROD HANGERS

HANGER NO.	HANGER TYPE	"F"	"G"	"H"	PIPE NO & SIZE	LOCATION PORT OFF ℄	LOCATION STBD OFF ℄	LOCATION FWD-AFT OF FR.	ELEV. ℄ CLAMP	ELEV. UP. CONN	HANG. BKT. NO	"J"	REMARKS
2 RHA-1	7			2'-2 3/8"	3" AS-2-4		8'-11 5/8"	7" FWD FR.173	42'-6"	44'-8 3/8"	PSA-5		OMIT ROD EYE & BEAM ATTACH. SEE DET. "8A"
RHA-2	7			24 5/8"	2 1/2" AS-3-5		14'-11 5/8"	12 1/4 FWD FR.172	42'-6"	44'-6 5/8"	PSA-3		
RHA-3	7			23 3/4	2 1/2" AS-1-6		10'-9"	4 3/8 AFT FR.171	42'-6"	44'-5 3/4"			
RHA-4	7			23 3/4"	2 1/2" AS-3-4		10'-9"	6 1/8 FWD FR.171	42'-6"	44'-5 3/4"			
RHA-5	7			20 7/8"	2 1/2" AS-3-2		15'-7 5/8"	17 1/4" AFT FR.171	42'-9 3/4"	44'-6 5/8"	PSA-3		
RHA-6	7			2'-3 3/4"	3" AS-2-2	12"		5" FWD FR.173	42'-6"	44'-9 3/4"			
RHA-7	7			2'-1"	3" AS-2-2		7"	15" FWD FR.171	42'-6"	44'-8"	PSA-4		

MISC. SUPPORTS

SUPPORT NO.	PIPE NO. & SIZE	PORT OFF ℄	STBD. OFF ℄	FWD-AFT OF FR.	ELEV. ℄ CLAMP	ELEV. LOW CONN	DETAIL NO.	REMARKS	FURN. BY

8

7

6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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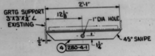
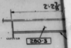
BUILDERS PLAN NO. M4650-180-5

FRAME 4 OF 4

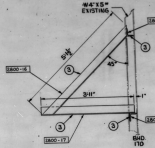
Oct 1980 8X


2'-1"
GRTG SUPPORT 3"X3"X½" ∠ EXISTING
12⅛"
1" DIA. HOLE
45° SNIPE
½"
④ 280-4-1
1¼"

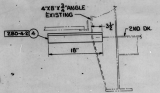
PSA-5



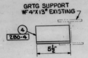
PSA


W4"X5# EXISTING
2800-18
③
5'-1½"
③
45°
2800-16
3'-11"
1"
③
③
2800-18
2800-17
BHD. 170

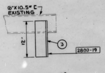
PSA-6 5


4"X8"X¾" ANGLE EXISTING
3½"
2ND DK.
280-4-2 ④
18"

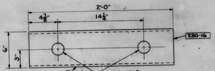
PSA-4


GRTG SUPPORT WF4"X13# EXISTING
④
280-4
5½"

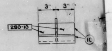
PSA-3


8"X10.5# [EXISTING
12"
③
2800-19

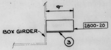
PSA-8 5


2'-0"
4⅞"
14¼"
280-16
6"
3"
⑯
2" DIA. HOLE

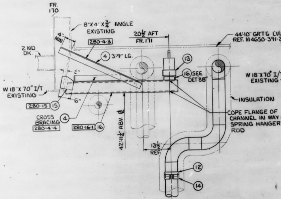
DETAIL "8-B"

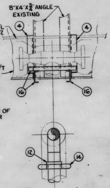


DETAIL
PROTECTION

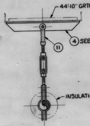

9"
2800-20
BOX GIRDER
③

PSA-7 5

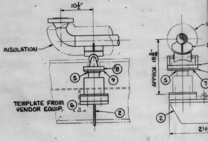

FR. 170
8"X4"X¾" ANGLE EXISTING
4" MIN
280-4-3
20½" AFT FR. 171
2ND DK.
④ 3'-9" LG.
⑬
⑯ SEE DET 8B"
2"
W 18"X 70# I/T EXISTING
280-15 ⑮
6"
INSULATION
CROSS BRACING ④
280-4-4
280-16-1 ⑯
42'-11¼" ABV. ℄
COPE FLANGE OF CHANNEL IN WAY OF SPRING HANGER ROD
13½" REF.
⑫
⑭


44'-10" GRTG LVL REF. M4650-391-2
8"X4"X¾" ANGLE EXISTING
④
④
W 18"X70# I/T EXISTING
⑯
⑯
⑫
⑭

DETAIL "9-A" 4


44'-10" GRTG LVL
④ SEE PSA-5
⑪
INSULATION

DETAIL "8-A"


10½"
INSULATION
⑧
⑤
⑨
TEMPLATE FROM VENDOR EQUIP.
⑥
②
APPROX. 18³⁄₁₆"
⑤
⑦
②
2'-1½"

5 DETAIL "7-A"

LIST OF PIPES

D. OTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	JOB NO.	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
	12"	40	.406	100	110	B36.10	CARBON STEEL SEAMLESS	A53,TY.S-GR.B		181	II		NOS. 128,135
	10"		.365										
	8"		.322										
	6"		.280										
	5"		.258										
	3"		.216			B36.10	CARBON STEEL SEAMLESS	A53,TY.S,GR.B					
	2½"		.203										
	¾"		.113										
	½"		.109										
	8"	80	.500			B36.10	CARBON STEEL SEAMLESS	A53 TY.S GR.B					
	1½"	40	.145					A53 TY.S GR.B					
	1"		.133										
										363	II		NOS. 128,135
	3"	40	.216	—	112	B36.10	CARBON STEEL SEAMLESS	A53 TY.S GR.B					
	2"		.154	—	112						I		
	2½"	80	.276	400	230	B36.10	CARBON STEEL SEAMLESS	A53 TY.S GR.B					
	2"		.218										128,135,136
	1½"		.200					A106 GR.B					
	1¼"		.191										
	¾"		.154					A106 GR.B			II		
	1½"	40	.145	—	112								
	½"		.109	—	112						I		
	¼"	80	.119	400	230			A106 GR.B					
	½"		.147								II		
	¼"	40	.088	—	112			A106 GR.B			I		
	1"	80	.119	400	230								

LIST OF VALVES

DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD	ANSI DIM.STD	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	PIN WHERE REQ'D	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG.OR FIG.NO
		150#	—	NOD. IRON	A395	BUNA-N	BRONZE	MONEL	—	WAFER TY.	-	BUTTERFLY-W/ENCLOSED GEAR OPERATOR	SEE NOTE #96	DEMCO NE-S
		150#	B16.10	CARB.STL.CAST	A216GR.WCB	BRONZE	BRONZE	BRZ.ALLOY	—	FLG'D. F.&D.	B16.5	GATE-S.W.D. W/PNEUMATICALLY OPERATED	SEE NOTE #96	LUNKENHEIMER
		150#	—	NOD. IRON	A395	BUNA-N		MONEL	—	WAFER TY.	-	BUTTERFLY-W/ENCLOSED GEAR OPERATOR	SEE NOTE #96	DEMCO NE-S
		150#	—	CARB.STL.CAST	A-216GR.WCB			BRONZE	—	LUG TY.	-	BUTTERFLY DIAPHRAM PNEUMATICALLY OPERATED	SEE NOTE #96	DEMCO NE
		150#	—	CARB.STL.CAST	A-216GR.WCB	STNS.STL.	STNS.STL	STNS.STL.	—	FLG'D. F.&D.	B16.5	PNEUMATICALLY OPERATED DIAPHRAM CONTROL W/N.O.D.	SEE NOTE #96	NORMALLY CLOSED
		150#	—	NOD. IRON	A395	BUNA-N	BRONZE	MONEL	—	WAFER TY.	-	BUTTERFLY-W/ENCLOSED GEAR OPERATOR	SEE NOTE #96	DEMCO NE-S
		150#				BUNA-N		MONEL	—		-	BUTTERFLY W/ LEVER OPERATOR		
		150#	B16.10	CARB.STL.CAST	A-216GR.WCB	BRONZE	BRONZE	BRZ.ALLOY	—	FLG'D.F.&D.	B16.5	GATE	2,6,90-93	LUNK'NH'M'R. FIG. 1512-B
		150#	B16.10	CARB.STL.CAST	A-216GR.WCB	BRONZE	BRONZE	BRZ.ALLOY	—	FLG'D.F.&D.	B16.5	GLOBE	6,90-93	1542
		150#	B16.10	CARB.STL.CAST	A-216GR.WCB				—	FLG'D. F.&D.	B16.5	ANGLE RELIEF VALVE SET AT 110 P.S.I.	ORDERED ON REF.#5	RV-29
		600#	—	FORGED STEEL	A105	STNS.STL	STNS.STL.	STNS.STL	—	SCREWED	B2.1	GLOBE STOP CHECK	NOS. 4,5,90-93	EDWARD FIG. 868
		600#	—	FORGED STEEL	A105	STNS.STL			—	SCREWED	B2.1	GLOBE	4,5,90-93	848
		600#	—	FORGED STEEL	A105	STNS.STL			—	SCREWED	B2.1	GLOBE	4,5,90-93	848
		150#	B16.10	CAST STEEL	A-216GR.WCB	BRONZE	BRONZE	BRONZE	—	FLG'D. F.&D.	B16.5	MANIFOLD-DUPLEX 8-VALVE (SUCTION)	SEE NOTE #96	TATE TEMCO
		150#	B16.10	CAST STEEL	A-216GR.WCB	BRONZE	BRONZE	BRONZE	—	FLG'D.F.&D.	B16.5	MANIFOLD-SIMPLEX 2-VALVE (SUCTION)	SEE NOTE #96	
		150#	B16.10	CAST STEEL	A-216GR.WCB	BRONZE	BRONZE	BRONZE	—	FLG'D.F.&D.	B16.5	MANIFOLD-SIMPLEX 2-VALVE (DISCHARGE)	SEE NOTE #96	
		~~150#~~	~~B16.10~~	~~CAST STEEL~~	~~A-216GR.WCB~~	~~BRONZE~~	~~BRONZE~~		MONEL	~~FLG'D. F.&D.~~	~~B16.5~~	~~SWING CHECK~~	~~NOS. 10,90-93~~	~~LUNKENH'M'R. FIG. 1572~~
		600#	—	FORGED STEEL	A-105	STNS. STL.	STNS. STL.	STNS. STL.	—	SCREWED	B2.1	PISTON CHECK	NOS. 90-93	EDWARDS FIG. #858
		600#	—						—			GATE-S.W.D.	NOS. 2,6,90-93	LUNK. FIG. NO. 1311
		150#	B16.10	CAST STEEL	A-216GR.WCB	BRONZE	BRONZE	BRONZE	—	FLG'D. F.&D.	B16.5	GLOBE	NOS. 6,90-93	LUNK'NH'M'R FIG. 1542
									MONEL			SWING CHECK	10,90-93	1572
		300#		CAST STEEL	A-216GR.WCB	STNS.ST'L.	STNS.STL.	STNS.STL	—	FLG'D. F.&D.		GLOBE STOP CHECK	6,90-93	3042-X
		600#		FORGED STEEL	A-105				—	FLG'D. F.&D.		GLOBE	4,5,90-93	EDWARD FIG. 828
		~~600#~~							—			~~CONTROL VALVE~~	~~VENDOR ?~~	
		600#	B16.10	FORGED ST'L	A-105	STNS.STL	STNS.STL	STNS.STL	—	FLGD., F/D.	B16.5	GLOBE	NOS. 4,5,90-93	EDWARD FIG. 828
									—			NEEDLE	4,5,90-93	3624 MOD
		300#	—						—	—		DIAPHRAGM ACT.CONTROL	FURN.W/CENT.CONT.CONSOLE	—
		600#	—						—			COMBUSTION CONTROL		—
			B16.10			STNS.STL	STNS.STL	STNS.STL	—	FLGD., F/D.	B16.5	GLOBE	NOS 4,5,90-93	EDWARD FIG 828
						~~STNS.STL~~	~~STNS.STL~~	~~STNS.STL~~	—			~~GLOBE~~	~~NOS. 4,5,90-93~~	~~EDWARD FIG. 828~~
		—	—						—	SOCKET WELD	—	SOLENOID		
		600#	B16.10	FORGED STEEL	A-105	STNS STL	STNS STL	STNS STL	—	FLGD. F.&D.	B16.5	GLOBE STOP-CHECK	NOS. 4,5,90-93	EDWARD FIG 846
		600#	—	FORGED STEEL	A-105	STNS.STL	STNS.STL	STNS.STL	—	SCREWED	B2.1	GLOBE	NOS. 4,5,90-93	EDWARD FIG. 848
		300#/150#	—						—			ANGLE RELIEF SET @ 365 PSI.	ORDERED ON REF.#5	RV-30
		300#/150#	—						—	FLG'D.F.&D.	B16.5	ANGLE RELIEF SET @ 365 PSI.	ORDERED ON REF.#5	RV-32
		600#	—	FORGED STEEL	A-105	STNS.STL	STNS.STL	STNS.STL	—	SCREWED	B2.1	GLOBE	NOS. 4,5,90-93	EDWARD FIG. 848
		150#	B16.10	CAST STEEL	A-216GR.WCB				—	FLG'D. F.&D.	B16.5	GATE-AIR MOTOR OPER'D. W/POSITION IND. SW.	SEE NOTE #96	LUNKENHEIMER
		600#	—	FORGED STEEL	A-105	STNS.STL	STNS.STL	STNS.STL	—	FLGD. F/D.	B16.5	GLOBE	NOS. 4,5,90-93	EDWARD FIG. 828
		600#							—				4,5,90-93	828
		300#/150#	—	CAST STEEL	A105				—			ANGLE RELIEF SET @ 110 P.S.I.	ORDERED REF.#5	RV-31
		—		FORGED STEEL	A105				—	SOCKET WELD		BALL VALVE SOL. OPERATED	VENDOR FURNISHED	MISER
		—		FORGED STEEL	A105				—	SOCKET WELD	—	GLOBE VALVE		R.P.&C. STYLE F-81
		200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GATE, S.W.D. RISING STEM	NOS. 1,90-93	POWEL FIG# 375
55	50	600#	—	FORGED STEEL	A105 GR II	STNS STL	STNS STL	STNS STL	—	SCREWED	B2.1	GLOBE	NOS 4,5,90-93	EDWARDS FIG 848
55	50	600#	—	FORGED STEEL	A-105 GR II	STNS STL	STNS STL	STNS STL	—	SCREWED	B2.1	GATE - FULL PORT	NOS. 4,6,90-93	VOGT FIG 13111
55	50	150#	B16.10	CAST STEEL	A-216GR.WCB	BRONZE	BRONZE	BRONZE	—	FLG'D. F.&D.	B16.5	GATE	NOS. 2,6,90-93	LUNK'NH'M'R. FIG. 1512-B
		150#	B16.10						—			GATE	2,6,90-93	1512-B
		150#							—			GLOBE	6,90-93	1542
		150#	B16.10	CAST STEEL	A216-GR-WCB	STNS.STL	STNS.STL	STNS.STL.	—			BALL-AIR-CYL. OPER'D. W/POSITION IND.SW.	SEE NOTE #96	AIR TO OPEN
			—						—			BALL AIR-CYL. OPER'D. W/POSITION IND.SWITCH	SEE NOTE #96	AIR TO OPEN
			—						—			BALL-AIR-CYL. OPER'D. W/POSITION IND.SWITCH	SEE NOTE #96	AIR TO OPEN
			—	FORGED STEEL	A105	STNS. STL.	STNS. STL.	STNS. STL.	—	SCRD.	B2.1	GLOBE STOP CHECK	NOS. 4,5,90-93	EDWARD FIG. 868
			—						—		B2.1	ANGLE RELIEF SET @ 55 P.S.I.	ORDERED ON REF.#5	RV-27
			—			STNS.STL	STNS.STL	STNS.STL	—		B2.1	GATE	NOS. 4,6,90-93	LUNK'NH'M'R. FIG. 1111-U
			—						—			GLOBE	4,5,90-93	EDWARD FIG. 848
		150#	—	BRONZE		BRONZE	BRONZE	BRONZE	—	FLG'D. F.&D.	B16.5	PRESSURE REDUCING - 50/20 PSI	SEE NOTE #96	
		~~600#~~	—	~~FORGED STEEL~~	~~A-105 GR.II~~	~~STNS.STL~~	~~STNS.STL~~	~~STNS.STL~~	—	~~SCREWED~~	~~B2.1~~	~~LIFT-CHECK~~	~~NOS. 4,10,90-93~~	~~EDWARD FIG. 838~~
			—						—		~~B2.1~~	~~GLOBE~~	~~4,5,90-93~~	~~848~~
		600#	—	FORGED STEEL	A105	STNS.ST'L	STNS.STL	STNS.STL	—	SCREWED	B2.1	LIFT- CHECK	4,10,90-93	EDWARD FIG. 838
			—						—			GATE - FULL PORT	4,6,90-93	VOGT FIG. 13373
			—						—			GLOBE	4,5,90-93	EDWARD FIG. 848
			—						—			~~BACK PRESSURE SET @ 45 PSI~~	~~VENDOR FURNISHED~~	
			—						—			~~ANGLE RELIEF-SET AT 75 PSI~~		
		600#	—	FORGED STEEL	A-105-GR.II	STNS.STL	STNS.STL	STNS.STL	—	SCREWED	B2.1	GLOBE	NOS. 4,5,90-93	EDWARD FIG. 848
		150#	B16.10	CAST STEEL	A-216GR.WCB	BRONZE	BRONZE	BRONZE	MONEL	FLG'D. F.&D.	B16.5	SWING CHECK	10,90-93	LUNK'NH'M'R. FIG. 1572
		600#	—	FORGED STEEL	A-105 GR.II	STNS.STL	STNS.STL	STNS.STL	—	SCREWED	B2.1	GLOBE STOP CHECK	4,5,90-93	EDWARD FIG. 868
		150#	B16.10	CAST STEEL	A-216GR.WCB		BRZ.	BRZ.	—	FLGD. F.&D.	B16.5	GATE-AIR MOTOR OPE'R'D. W/POSITION IND.SWITCH	SEE NOTE #96	LUNKENHEIMER
		~~600#~~	~~—~~	~~FORGED STEEL~~	~~A-105 GR.II~~	~~STNS.STL~~	~~STNS.STL.~~	~~STNS.STL.~~	—	~~SCREWED~~	~~B2.1~~	~~GLOBE STOP CHECK~~	~~NOS. 4,5,90-93~~	~~EDWARD FIG. 868~~
		~~150#~~	~~B16.10~~	~~FORGED STEEL~~	~~A105~~	~~STNS.STL~~	~~STNS.STL~~	~~STNS.STL~~		~~FLGD. F.&D.~~	~~B16.5~~	~~GLOBE-AIR-CYL. OPER'D.W/POSITION IND.SWITCH~~	~~SEE NOTE #96~~	

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
8	6/28/78		1- REVISE DESCRIP., CHG'D MAT'L, & CHG'D PC. MK. NO. TO READ D.O.-127 OF VLV NO DO-126 PER Y.I.S. NO. 4650-22-187. 2- ADDED DO-14 PER YIS #4650-22-160 3- REVISED VLV. NOS. DO-103, DO-104 & DO-105 IN THEIR ENTIRETY & DECR. QTY. OF DO-105 (2-1)	PCG	6 30 78 Jga
9	10-17-78		1-ITEM DO-7 INCR. FROM 240' TO 320', AND ITEM DO-9 INCR. FROM 40' TO 60'	P.G.	10 23 78 Jga

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	11/29/76		1-DELETED DO-111, DO-112, DO-116, DO-117 AND DO-122. 2-ADDED DO-123 3-REVISED DO-123 QTY, SIZE AND DESCRIPTION. ABV. ITEMS OF THIS ALT. WERE MADE TO SUIT. REVISED PIPING DIAGRAM M-4650-111-20-61	D.L.B.	G.G. SHARP LTR. DATED 5-18-77
2	5/19/77		1. ADDED DO-13, DO-124 & FO-132. 2. REVISED SIZE OF FO-109 FROM 1½"x3" TO 2"x2" 3. ADDED SPECIAL NOTES & MFR NO. TO FO-129. (WAS "VENDOR FURN") PER DEVELOPMENT.	CEW	G.G. SHARP LTR. DATED 7-18-77
			4. REVISED FO-125, FO-126, FO-129, FO-130, FO-138 AND FO-139 FROM 600# SCRD. TO 600# FLGD.	G.L.W.	
			5. ADDED FO-29 & DO-125 6. INCR. THE FOLLOWING: FO-105 (1-7) AND FO-111 (1-3) 7. DELETED FO-116	GLW	
			8. FOR FO-100, FO-102, FO-105, FO-106 REVISED MAT'L FROM C. ST'L. TO NOD. IRON, TYPE FROM FLGD. TO WAFER, & REPLACED ALL SP'L NOTES WITH NOTE #96.	J.J.R.	
3	7/8/77		1. LIST OF PIPES DO-1 LGTH CHG'D FROM 63' TO 86', FO-5 QTY CHG'D FROM 150' TO 180' 2. LIST OF VALVES ADDED FO-140 & DO-126	AG	
4	9-1-77		1. ADDED PIPE NOS. FO-12 & KO-1 AND VALVE NOS. FO-117 & FO-118 2. REVISED FO-23 FROM SCH 40 TO SCH 80 PIPE. 3. REVISED MANUFACTURER DRWG. NO. FROM VOGT. FIG #11103 TO VOGT. FIG #13111 TO AGREE WITH TYPE VALVE REQ'D. DO-124	GLW.	9/14/77 JK
5	10-7-77	2	1- INDICATED, DESIGN CRITERIA & USCG CLASS FOR ALL FO-PIPES.		
		2	2- REMOVED RES. & DELETED FO-124		
		2+3	3- ADDED & RES. FO-141 TO FO-143		
		2	4- DECR. THE QTY OF FO-127 (2-1)	PCG	10/13/77 PG
6	1-24-78		1. INCREASED THE LENGTH FOR: DO-1 (86' TO 110'), DO-2 (220' TO 260'), FO-1 (175' TO 189'), FO-4 (45' TO 48'), FO-18 (6' TO 20'), FO-23 (85' TO 174'), FO-29 (1' TO 3'). 2. INCREASED THE QTY. FOR: FO-132 (1 TO 2). 3. ADDED KO-2. 4. REVISED PRESS. STD. FOR FO-127 (600# TO 300#). 5. REVISED SIZE FOR: FO-131 (1¼" TO ¾") 6. REMOVED RESERVATION & DELETED FO-143. 7. REMOVED RESERVATION FOR: FO-141 & FO-142.	RHM	1-26-78 JGa
7	4-26-78		1. REVISED QTY. OF THE FOLLOWING ITEMS FO-17 FROM 490' TO 300' FO-21 352' 300' FO-132 2 1 FO-133 9 2 DO-106 3 2 DO-109 4 3 DO-115 2 3 DO-2 260' 180' DO-3 198' 260' DO-4 115' 140' DO-5 42' 80' DO-7 320' 240' DO-8 101' 140' DO-9 133' 40' KO-2 80' 100' FO-129 6 12 2 DELETED ITS. FO-22 FO-130 AND DO-123 3. ADDED ITS. FO-144 FO-145 AND DO-126	LPK	5 8 78 Jga

4651		
4650	27,340 DWT CONTAINERSHIP	8450
HULL	DESIGN	CHARGE

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE AUGUST 21, 1976
DRAWN
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-181-07-1
ALT. NO. 9

PIPE & VALVE LIST FOR FUEL OIL FILLING, TRANSFER, SERVICE & DIESEL OIL IN MACH'Y. SPACE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	9-27-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

REFERENCE . PLANS

NO.	PLAN NO.	TITLE
5	M-4650-111-13	SCHEDULE OF SAFETY & RELIEF VALVES
4	M-4650-181-07-12	D.O. PIPING 2ND DK. AND ABOVE AFT. OF FR. 157
3	M-4650-181-07-11	FUEL OIL SERVICE PIPING FWD. FR. 157
2	M-4650-181-07-4	ARRG'T. OF FUEL OIL PIPING FRS. 157 TO 122
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

M-606

		4650-51 4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
		DATE OF ISSUE								
	ALTERATION	1	2	3	4	5	6	7	8	9
	ENGINEERING DISTRIBUTION	4-18-77	6-6-77	7-18-77	9-20-77	10-19-77	2-1-78	5-12-78	7-7-78	10-30-78
MAIL	OWNERS	5	4	5	4	3	3	3	3	3
	AMERICAN BUREAU	3								
	LLOYD'S R.S.									
	U.S.M.A.									
	U.S. NAVY									
	U.S.C.G.	3								
	JOINER CONT'R.									
INSPECTION	OWNER'S INSP.	1	1	1	1	1	1	1	1	1
	AM. BU. INSP.									
	LLOYD'S INSP.									
	U.S.M.A. INSP.	1	1	1	1	1	1	1	1	1
	U.S. NAVY INSP.									
	U.S.C.G. INSP.	1								
OFFICE	HULL DRAFT.-21	1	1	1	1	1	1	1	1	1
	MACH. DRAFT.-22	2	2	2	2	2	2	2	2	2
	ELEC. DRAFT.-23	1	1	1	1	1	1	1	1	1
	OUTFIT. DRAFT.-25									
	ESTIMATING									
	L.DOUGHERTY (CTD)	1	1	1	1	1	1	1	1	1
MISC.	PRODUCTION (BCD)									
	ORDER DEPT.									
	JOINER CONT.YARD									
	PHILLIPS - PLANNING	2								
	TOTAL ENG'R. DIST.	18	11	12	11	10	10	10	10	10
	YARD DISTRIBUTION	6/16/77	7/20/77	10/5/77	11/10/77	2/20/78	5/18/78	7/10/78	11/3/78	
YARD	UAD-OFFICE	1	1	1	1	1	1	1	1	
	J. SIMMONS	1	1	1	1	1	1	1	1	
	PIECE RATE-11	1	1	1	1	1	1	1	1	
	TEST DEPARTMENT					1				
	QUALITY ASSURANCE	1	1	1	1	1	1	1	1	
	WEEKL PLANNING	1	1	1	1	1	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	2	2	2	2	2	
	35 DEPT.	2	2	2	2	2	2	2	2	
	P. MCNAIR	1	1	1	1	1	1	1	1	
	H. LEVY	1	1	1	1	1	1	1	1	
	NO. WAY									
	NO. WAY									
	NO. WAY									
	NO. WAY									
	STRUCT. SUPER.	2	2	2	2	2	2	2	2	
	OPTICAL DETAIL-46	2	2	2	2	2	2	2	2	
	WET DOCK									
MACH'Y & OUTFIT.	PIPE SHOP-52	6	6	6	6	6	6	6	6	
	OUTFIT. #1 PIER	1	1	1	1	1	1	1	1	
	PIPE DRAFT.-52	2	2	2	2	2	2	2	2	
	BOILER SHOP-66	1	1	1	1	-	-	-	-	
	OUTSIDE MACH.-60	1	1	1	1	2	2	2	4	
	Q-MAT'L	1	1	1	1	1	1	1	1	
	ELECTRIC SHOP-70									
	SHEET MET. SHOP-74									
	COPPER SHOP-51	1	1	1	1	1	1	1	1	
	PAINT SHOP-78	1	1	1	1	1	1	1	1	
OTHER	WELDING									
	MOLD LOFT-41	1	1	1	1	1	1	1	1	
	BRACKET SHOP									
	TOTAL YARD DIST.	28	30	30	30	30	30	30	32	

4650-51-ALT 2
4650-51-ALT 3
4650-51-ALT 4
4650-51-ALT 5
4650-51-ALT 6
4650-51-ALT 7
4650-51-ALT 8
4650-51-ALT 9

SQ.FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-181-07-1
Oct 1980
8X
FRAME 1 OF 3

	A.S.T.M. SPEC.	SERVICE	JOB NO.	U.S.C.G CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
			363			NOS. 128, 135
	A53 TY.S GR.B		↓			↓
	A53 TY.S GR.B					
	A53 TY.S GR.B		↓			↓
			363			NOS. 128 & 135
	A53 TY.S GR.B		↓			↓

STRUCTURAL MODULAR UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #
	35'				12'	13	18'	46'	65'															
	17'				10'				5'															
	30'																							
	44'						4'																	
55'	120'																							
	14'																							
	10'																							
	2'																							
	1'																							
							5'																	
60'	110'																							
	14'																							
	25'																							
	80'		15'																					
	60'	50'	80'				30'																	
	60'	24'	50'			20'	20'																	
	6'																							
	15'					4'-0"	4'-0"																	
	1'					1'	1'																	

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	GALV.	TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	°F	ANSI DIM. STD.	DESC
502844	502844M			6	FO-1	189'-0"			12"	40	.406	100	110	B36.10	CARBON STEE
↓					FO-2	41'-0"			10"		.365				
					FO-3	40'-0"			8"		.322				
	502844-M			6	FO-4	48'-0"			6"		.280			↓	
	502844-E			3	FO-5	180'-0"			5"		.258				
					FO-6	40'-0"			3"		.216			B36.10	CARBON STEEL
					FO-7	10'-0"			2½"		.203				
					FO-8	8'-0"			¾"		.113			↓	
					FO-9	10'-0"			½"	↓	.109				
					FO-10	5'-0"			8"	80	.500			B36.10	CARBON STEE
					FO-11	1'-0"			1½"	40	.145				
502844-F				4	FO-12	10'-0"			1"	↓	.133	↓	↓	↓	
502844				7	FO-17	300'-0"			3"	40	.216	—	112	B36.10	CARBON STEEL
	502844-M			6	FO-18	20'-0"			2"	↓	.154	—	112	↓	
					FO-19	25'-0"			2½"	80	.276	400	230	B36.10	CARBON STEEL
					FO-20	130'-0"			2"		.218				
				7	FO-21	300'-0"			1½"		.200				
				7	~~FO-22~~	~~34'-0"~~			~~1¼"~~		~~.191~~				
F	502844-M			4,6	FO-23	174'-0"			¾"	↓	.154	↓	↓		
					FO-24	6'-0"			1½"	40	.145	—	112		
					FO-25	17'-0"			½"	↓	.109	—	112		
					FO-26	142'-0"			¼"	80	.119	400	230		
					FO-27	24'-0"			½"	↓	.147	↓	↓		
					FO-28	8'-0			¼"	40	.088	—	112	↓	
502844-M				2,6	FO-29	3'-0"			1"	80	.179	400	230	↓	

LIST OF VAL

PIN WHERE REQ'D	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG.OR FIG.NO.
			~~BALL VALVE~~	~~VENDER FURNISHED~~	
STN.STL.	FLG'D F&D	B16.5	GLOBE	NO.4,5,90-93	EDWARDS 828
—	SCREWED	B2.1	GLOBE STOP CHECK	↓	↓ 868
—	SCREWED	—	GATE VLV, QUICK-OPENING, SELF CLOSING	NOS. 65 & 90-93	POWELL FIG #3624

STRUCTURAL MODULAR UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #	UNIT #4	UNIT #	UNIT #	UNIT #7	UNIT #8	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #181-07-11	DRWG #181-07-12
	1																							
	2																							
	1																							
	1																							
	1																							
	1					3	3																	
	1																							
	2																							
	1																							
	1																							
	2																							
	3																							
	1																							
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	1																							
	1																							
						1	1																	
						1	1																	
	3																							
	1																							
	3																							
	7																							
	3																							
	1																							
	1																							
						1	1																	
						6	6																	
						3	3																	
	1																							
	2																							
	2																							
	2																							
																							8	
						1	1																	
	1																							
						1	1																	
						6	6																	
			2																					
			1																					
	1		1																					
	1																							2
	1																							
							2																	
			1																					
							1																	
			2																					
			1																					
			2																					
						1	2																	
							1																	
	1		2																					
																								1
							1																	
			2																					

REQUISITION NO.			CODE NO.	JOB NO.	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	°F	PRESS STD	ANSI DIM.STD.	BODY MATERIAL	ASTM SPEC.	SEAT	DI
502800-A				181		FO-100	1	12"			150#	—	NOD. IRON	A395	BUNA-N	BRO
503800						FO-101	2	8"			150#	B16.10	CARB.STL.CAST	A216 GR.WCB	BRONZE	BRO
502800-A						FO-102	1	8"			150#	—	NOD. IRON	A395	BUNA-N	
503800-C						FO-103	1	8"			150#	—	CARB.STL.CAST	A-216 GR.WCB		
502800-E						FO-104	1	6"			150#	—	CARB.STL.CAST	A-216 GR.WCB	STNS.STL.	STNS
502800-A					2	FO-105	7	6"			150#	—	NOD. IRON	A395	BUNA-N	BRO
502800-A						FO-106	1	5"			150#	—	↓	↓	BUNA-N	
502800						FO-107	2	3"			150#	B16.10	CARB.STL.CAST	A-216 GR.WCB	BRONZE	BRO
↓						FO-108	1	2½"			150#	B16.10	CARB.STL.CAST	A-216 GR.WCB	BRONZE	
—	—				2	FO-109	1	2"x2"			150#	B16.10	CARB.STL.CAST	A-216 GR.WCB		
502800						FO-110	2	¾"			600#	—	FORGED STEEL	A105	STNS.ST'L	
	502800-F				2	FO-111	3	½"			600#	—	FORGED STEEL	A105	STNS.STL	
↓						FO-112	2	¾"			600#	—	FORGED STEEL	A105	STNS.ST'L	
503800-A						FO-113	1	5"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRO
						FO-114	1	6"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRO
↓						FO-115	1	5"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRO
~~502800~~					2	~~FO-116~~	~~6~~	~~10"~~			~~150#~~	~~B16.10~~	~~CAST STEEL~~	~~A-216 GR.WCB~~	~~BRONZE~~	~~BRO~~
502800-H					4	FO-117	2	1"			600"	—	FORGED STEEL	A-105	STNS. STL.	STNS
↓				↓	4	FO-118	2	1"			600"	—	↓	↓	↓	
502800				363		FO-120	3	3"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRO
↓						FO-121	1	3"			↓		↓	↓		
						FO-122	3	2½"			300#		CAST STEEL	A-216 GR.WCB	STNS.ST'L	STNS
						FO-123	7	2"			600#	↓	FORGED STEEL	A-105	↓	
—	—				5	~~FO-124~~	~~1~~	~~1"~~			~~600#~~	—				
502800 F					2	FO-125	3	2"			600#	B16.10	FORGED ST'L	A-105	STNS.STL	STNS
↓					2	FO-126	1	1½"			↓	—			↓	
500087	—				5,6	FO-127	1	1"			300#	—				
↓	—					FO-128	2	1"			600#	—				
502800-F	502800-R				2,4,7	FO-129	12	1½"				B16.10			STNS.STL	STNS.
502800F					2,7	~~FO-130~~	~~6~~	~~1¼"~~			↓	↓			~~STNS.STL~~	~~STNS~~
500087					6	FO-131	6	¾"			—	—	↓	↓	↓	↓
502800	502800-K				2,6,7	FO-132	1	¾"			600#	B16.10	FORGED STEEL	A-105	STNS STL	STNS
502800					7	FO-133	2	½"			600#	—	FORGED STEEL	A-105	STNS.STL	STNS.
—	—					FO-134	2	1"x1½"			300#/150#	—				
—	—					FO-135	2	½"x1"			300#/150#	—				
502800						FO-136	5	¼"			600#	—	FORGED STEEL	A-105	STNS.STL	STNS.
503800						FO-137	8	3"			1.50#	B16.10	CAST STEEL	A-216 GR.WCB		
502800-F					2	FO-138	5	1"			600#	↓	FORGED STEEL	A-105	STNS.STL	STNS.
↓				↓	2	FO-139	2	1½"			600#	↓	↓	↓		
—					3	FO-140	1	1"x1½"			300#/150#	—	CAST STEEL	A105		
500087			~~RES~~		5,6	FO-141	2	1½"			—		FORGED STEEL	A105		
500001			~~RES~~		5,6	FO-142	12	¾"			—		FORGED STEEL	A105	↓	↓
502800-G					3	DO-126	1	1"			200#	—	BRONZE	B-61	BRONZE	BRON
502800-F				363	2	DO-125	2	¾"	55	50	600#	—	FORGED STEEL	A105 GR II	STNS.STL	STNS S
502800-F				363	2,4	DO-124	1	¾"	55	50	600#	—	FORGED STEEL	A-105 GR II	STNS STL	STNS S
502800				363		DO-100	2	3"	55	50	150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRONZ
↓						DO-101	3	2½"			150#	B16.10	↓	↓	↓	↓
						DO-102	3	2½"			150#	↓				
502800-D					8	DO-103	2	1½"			150#	B16.10	CAST STEEL	A216-GR-WCB	STNS.STL	STNS.S
↓					8	DO-104	1	1½"				—	↓	↓	↓	↓
					8	DO-105	1	1"				—				
502800					7	DO-106	2	1¼"				—	FORGED STEEL	A105	STNS.STL.	STNS.S
—	—					DO-107	1	1½x2"				—				
502800						DO-108	2	1¼"				—			STNS.STL	STNS.S
↓					7	DO-109	3	1"			↓	—	↓	↓	↓	↓
500018	—					DO-110	1	1"			150#	—	BRONZE		BRONZE	BRON
~~502800~~					1	~~DO-111~~	~~2~~	~~¾"~~			~~600#~~	—	~~FORGED STEEL~~	~~A-105 GR.II~~	~~STNS.STL~~	~~STNS.S~~
~~502800~~					1	~~DO-112~~	~~2~~	~~¾"~~			↓		↓	↓	↓	
502800						DO-113	1	½"			600#	—	FORGED STEEL	A105	STNS.ST'L	STNS.S
↓						DO-114	11	¾"				—				
	502800-R				7	DO-115	3	1¼"			↓	—	↓	↓	↓	↓
—					1	~~DO-116~~	~~1~~	~~1¼~~								
—					1	~~DO-117~~	~~1~~	~~½"~~								
502800						DO-118	2	½"			600#	—	FORGED STEEL	A-105 GR.II	STNS.STL	STNS.S
↓						DO-119	1	4"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRONZ
						DO-120	1	1"			600#	—	FORGED STEEL	A-105 GR.II	STNS.STL	STNS.S
503800						DO-121	2	2½"			150#	B16.10	CAST STEEL	A-216 GR.WCB	↓	BRZ.
~~502800~~				↓	1	~~DO-122~~	~~1~~	~~¾"~~			~~600#~~	—	~~FORGED STEEL~~	~~A-105 GR.II~~	~~STNS.STL.~~	~~STNS.S~~
					1,7	~~DO-123~~	~~1~~	~~½"~~			~~150#~~	~~B16.10~~	~~FORGED STEEL~~	~~A105~~	~~STNS.STL~~	~~STNS.S~~

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 8X

BUILDERS PLAN NO. M4650-181-07-1

FRAME 2 OF 3

LIST OF PIPES

STRUCTURAL MODULAR UNIT APPLICATION

UNIT #	UNIT # 2	UNIT #	UNIT # 4	UNIT #	UNIT # 6	UNIT # 7	UNIT # 8	UNIT # 9	UNIT # 10	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	DWG 181-23	DWG #181 07-12
																								34'
	60'				10'				6'															50'
	80'		33'				12'																	4'
	60'		9'		30'		8'-0"	60'	60'															
			3'				80'		50'															
			4'				70'																	90'
	60'		180'		10'		60'		9'														80'	3'
			70'				165'																	
			40'				85'																20'	
			30'																					
	3'																							
			5"																					
						120'	80'																16'	
						80'																		

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D.			SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA		ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	JO N
						BLK.	GALV.	TOTAL				P.S.I.	°F					
502844	502844-E	502844-M		3,6	DO-1	110'-0"			4"	40	.237			B36.10	CARBON STEEL SEAMLESS	A53 TY.S GR.B		36
↓	502844-M			6,7	DO-2	180'-0"			3"	↓	.216			↓	↓	↓		↓
↓	502844-R			7	DO-3	260'-0"			2½"	↓	.203			↓	↓	↓		↓
↓	↓			7	DO-4	140'-0"			2"	↓	.154			B36.10.	CARBON STEEL SEAMLESS	A53 TY.S GR.B		↓
↓	↓			7	DO-5	80'-0"			1½"	↓	.145			↓	↓	↓		↓
↓	502844-P				DO-6	465'-0"			1¼"	↓	.140			↓	↓	↓		↓
↓	502844-P	502844-S		7,9	DO-7	320'-0"			1"	↓	.133			↓	↓	↓		↓
↓	502844-R			7	DO-8	140'-0"			¾"	↓	.113			↓	↓	↓		↓
↓	502844-S			7,9	DO-9	60'-0"			½"	↓	.109			↓	↓	↓		↓
↓					DO-10	9'-0"			3"	80	.300			B36.10	CARBON STEEL SEAMLESS	A53 TY.S GR.B		↓
↓					DO-11	7'-0"			3"	40	.216"			↓	↓	↓		↓
↓					DO-12	7'-0"			¼"	↓	.088			↓	↓	↓		↓
502844-C				2	DO-13	20'-0"			⅜"	40	.091			↓	↓	↓		↓
STOCK				8	DO-14	0'-6"			6"	↓	.280			↓				
502844-F				4	KO-1	200'-0"		200'-0"	1"	40	.133			B36.10	CARBON STEEL SEAMLESS	A53 TY.S GR.B		363
502844-M	502844-R			6,7	KO-2	100'-0"		100'-0"	1½"	40	.145			↓	↓	↓		↓

LIST OF VALVES

STRUCTURAL MODULAR UNIT APPLICATION

UNIT #	UNIT # 2	UNIT #	UNIT #	UNIT #	UNIT #	UNIT # 7	UNIT # 8	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #
						1	1																	
	1																							
							1																	

REQUISITION NO.			CODE NO.	JOB NO.	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		PRESS STD.	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM				END TYPE	ANSI DIM. STD.	TYPE	SPE FR
									P.S.I.	°F					SEAT	DISC	STEM	PIN WHERE REQ'D.				
			~~RES.~~		5,6	~~F0-143~~	~~3~~														~~BALL VALVE~~	~~VEN~~
502800-R				363	7	FO-144	2	¾"			600#	B16.10	FORGED STEEL	A-105	STN.STL.	STN.STL.	STN.STL.	STN.STL.	FLG'D F&D	B16.5	GLOBE	NO.4
↓				363	7	FO-145	1	½"			↓	—	↓	↓	↓	↓	↓	—	SCREWED	B2.1	GLOBE STOP CHECK	
~~502800-R~~	502800-S			363	7,8	DO-127	1	2"			200#	—	BRONZE	B62	BRZ	BRZ	BRZ.	—	SCREWED	—	GATE VLV, QUICK OPENING, SELF CLOSING	N

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BUILDERS PLAN NO. M4650-181-07-1

FRAME 3 OF 3

LIST OF FLANGES

STALL YDRO EST	PRESS STD	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	JOB No.	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
5	150#	B16.5	FORGED STEEL	A105	FLANGE-WELDING NECK F/D BORE FOR SCH. 40 PIPE	FUEL OIL FILLING & TRANSFER	181		NOTES 90-93	TUBE TURN PT. NO. 30
										30
										30
										30
					- SLIP ON					50
			FORGED STEEL						155, 90-95	50
			FORGED STEEL						90-93	50
					- SOCK. WELD BORE FOR SCH 40 PIPE					150
					-SOCK. WELD BORE FOR SCH. 40 PIPE					150
					-SLIP-ON					50
										50
					FLANGE-WELD NECK CAM-LOCK W/BLANK ATTACHED BY CHAIN BORE SCH. 40 PIPE				NOTES 90-93	SIM. TO CAMLOCK & CAM FLG.
					SLIP ON WELD F&D					TUBE TURN #50
					SOCK WELD BORE FOR SCH 40					#150
	300#				SLIP ON WELD					#51
00	600#	B16.5	FORGED STEEL	A105	FLANGE- SOCKET WELD F/D BORE FOR SCH. 80 PIPE	FUEL OIL SERVICE	363		NOTES 90-93	TUBE TURN PT. NO. 152
										152
	300#				- WELD. NECK					31
										31
					-SOCKET WELD					151
										151
										151
										151
										151
										151
										50
	150#				-SLIP-ON; FLAT FACED					50
										50
										50
					- SOCKET WELD BORE FOR SCH. 40 PIPE					150
										150
					- WELD. NECK BORE FOR SCH. 40 PIPE					30
	600#				SOCKET WELD 80					152
										152
	300#				- WELD NECK F&D 40					31

LIST OF GASKETS

STALL YDRO EST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	JOB NO.	CODE NO.	REMARKS	CAT. OR DRWG. NO.
165	150#	B16.21	HYDROIL	MIL-P-20085	1/8" THK. RING GASKET	FUEL OIL FILLING AND TRANSFER	181			ANCHOR PACKING STYLE 50
									USE W/FL-209	
									USE W/FL-210	
	300#									
600	600#	—	STAIN. STEEL	SPEC.-COMM'L.	SPIRAL WOUND GASKET	FUEL OIL SERVICE	363			FLEXITALLIC "CG"
	300#	—								
		—								
		—								
		—								
		—								
	150#	B16.21	HYDROIL	MIL-P-20085	1/8" THK. RING GASKET					ANCHOR PACKING STYLE 50
					FULL FACE GASKET					
					RING GASKET					
	300#	—	STAIN. STEEL	SPEC.-COMM'L.	SPIRAL WOUND GASKET- CARBON STL. OUTER RING					FLEXITALLIC "CG"
		—								
	600#	—								
	150#	B16.21	HYDROIL	MIL-P-20085	1/8" THK RING GASKET					ANCHOR PACKING STY. 50
					FULL FACE GASKET					
	600#	—	STAIN STL.	SPEC COMML	SPIRAL WOUND GASKET- CARBON STL. OUTER RING					FLEXITALLIC "CG"
	300#	—								

LIST OF STUDS, BOLTS & NUTS

TH.	ANSI DIM. STD.	HVY. HEX. HD. NUTS SEMI-FINISHED (2) PER STUD MATERIAL ASTM	DIA.	ANSI DIM. STD.	DESIGN CRITERIA PSI	°F	HVY. HEX. HD. BOLTS MATERIAL ASTM	DIA.	LGTH.	ANSI DIM. STD.	HVY. HEX. HD. NUTS SEMI-FINISHED MATERIAL ASTM	DIA.	ANSI DIM. STD.	SERVICE	CODE NO.	JOB NO.	REMARKS
					100	110	A 307 GR. B	7/8"	7"	B18.2.1 & B1.1 UNC-2A	A 307 GR. B	7/8"	B18.2.2 & B1.1 UNC-2B	FUEL OIL FILLING & TRANSFER FOR 12" VALVE FO-100		181	
								3/4"	6"			3/4"		8" FO-102 & 108			
								3/4"	5½"			3/4"		6" FO-105			
								3/4"	5½"			3/4"		5" FO-106			
								5/8"	3"			5/8"		2½" & 3" JOINT			
								3/4"	3½"			3/4"		8" PUMP CONN.			
								3/4"	3¾"			3/4"		5" & 6" JOINT			
							A 307 GR. B GALV.	5/8"	3"		A 307 GR. B GALV.	5/8"		3" JOINT			
							A 307 GR. B	3/4"	3½"		A 307 GR. B	3/4"		8" JOINT			
								5/8"	2¾"			5/8"		2" JOINT			
	B18.2.1 & B1.1 UNC-2A	A194 SYM 2H	3/4"	B18.2.2 & B1.1 UNC-2B										FUEL OIL TRANSFER FOR 6" 150# JOINT		181	
	B18.2.1 & B1.1 UNC-2A	A194 SYM 2H	5/8"	B18.2.2 & B1.1 UNC-2B	400	230								FUEL OIL SERVICE FOR 1" 600# JOINT & 3/4" 600#		363	
			3/4"											2½" 300#			
			5/8"											2" 300#			
			3/4"											1½" 300#			
			1/2"											½" 300#			
			3/4"											5" 150#			
			1/2"											½" 150#			
			5/8"											1" 300			
			5/8"											¾" 300			
			5/8"											2"-600#			
			3/4"											1½"-600#			
			3/4"											¾"-600# JOINT			

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	7/8/77		1. LIST OF FLANGES: FO-207 CHGD QTY (2 TO 3) F.O-232 " " (3 TO 4) DO-201 " " (8 TO 13) DO-203 " " (9 TO 12) ADDED FO-212, 213, 214, 215, 233 & DO-209, 210. FO-227 DESC. REVISED TO FLAT-FACED. 2. LIST OF GASKETS: FO-300 CHG'D QTY. (1 TO 4) FO-301 " " (5 TO 6) ADDED FO-305, 306, 307, 308, 323, 324, 325, 326. 3. LIST OF BOLTS, NUTS ETC.: FO-404 CHG'D QTY. (36 TO 76) FO-406 " " (120 TO 144) FO-408 " " (16 TO 32) ADDED FO-409, 421, 422 FO-401 LGTH. CHG'D. FROM 2¼" TO 6" FO-403 " " " 5¼" TO 5½" DO-400 REVISED QTY. (56 TO 112) DO403 SERVICE DES. REVISED. 4. QTY. DO-302 (9 TO 13), DO-303 (1 TO 2) 5-FURNISHED "DESIGN CRITERIA" FOR F.O. SERV. (WAS RES.)	AG	G.G. SHARP LTR. DATED 9-1-77
2	10-3-77		1-INCR. THE QTY OF: FO-211 (1-6), FO-216 (2-16), FO-217 (2-4), FO-326 (2-10), DO-201 (13-15), DO-205 (6-8), DO-206 (2-8), DO-301 (11-12), DO-306 (2-6), DO-404 (16-28) 2-ADDED FO-234, FO-327 & FO-423 3-FO-232 CH'G'D "BORE FOR SCH 80 PIPE" TO READ "BORE FOR SCH 40 PIPE"	PCC	10/4/77
3	1-24-78		1. INCREASED THE QTY. FOR: DO-201 (15-17), DO-301 (12-13), DO-400 (112-120), FO-216 (16-42), FO-326 (10-18), & FO-422 (8-80).	RHM	1-26-78
4	3-29-78 6-28-78		1. ADDED JOB NO. COLUMN 2-ADDED FO-235, FO-328, & FO-423 (NOW FO-424) PER Y.I.S. NO 4650-22-159. 3-ADDED KO-200, KO-300 & KO400 4-INCR QTY OF DO-209 (1-3), DO-304 (1-2) & DO403 (24-32) PER Y.I.S. NO. 4650-22-150; INCR. DO304 (2-3) 5-DECR QTY OF FO-227 (7-5) & FO206 (10-5) 6-DELETED FO-205 & DO-202	RHM PCC	6-30-78
5	9-29-78		1-QUANT. OF THE FOLLOWING ITEMS CHANGED PER Y.I.S. M-4650-22-283 ITEM FO-322 FROM 2 TO 4 FO-326 18 34 FO-419 12 16 FO-420 12 16 FO-422 80 152	P.G.	8-26-79

1

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. AS NOTED

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE NOV. 10, 1976
DRAWN EJD/GLW.
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-181-07-2
ALT. NO. 5

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR F.O. & D.O. FILL TRANSFER AND SERVICE PIPING IN MACHY. SPACE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	9-27-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

M-607

		DATE OF ISSUE						
		4650-51	4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
	ALTERATION	0	0	1	2	3	4	5
	ENGINEERING DISTRIBUTION	7-8-77	6-7-77	7-18-77	10-17-77	1-30-78	7-7-78	8-31-79
MAIL	OWNERS	5		5	3	3	3	3
	AMERICAN BUREAU	3						
	LLOYD'S R.S.							
	U.S.M.A.							
	U.S. NAVY							
	U.S.C.G.	3						
	JOINER CONT'R.							
INSPECTION	OWNER'S INSP.		1	1	1	1	1	1
	AM. BU. INSP.							
	LLOYD'S INSP.							
	U.S.M.A. INSP.		1	1	1	1	1	1
	U.S. NAVY INSP.							
	U.S.C.G. INSP.							
OFFICE	HULL DRAFT.-21	1	1	1	1	1	1	1
	MACH. DRAFT.-22	2	2	2	2	2	2	2
	ELEC. DRAFT.-23	1	1	1	1	1	1	1
	OUTFIT. DRAFT.-25							
	ESTIMATING							
	J. DOUGHERTY (CTD)	1	1	1	1	1	1	1
MISC.	PRODUCTION (BCD)							
	ORDER DEPT.							
	JOINER CONT. YARD							
	WILLIAMS-PLANNING	2						
	TOTAL ENG'R. DIST.	13	7	12	10	10	10	10
	YARD DISTRIBUTION	6-8-77	7-29-77	11-16-77	2-20-78	7-14-78	9-5-79	
YARD	[illegible] OFFICE	1	1	1	1	1	1	
	GEO. EASTBURG	1	1	1	1	1		
	PIECE RATE-11	1	1	1	1	1	1	
	TEST DEPARTMENT							
	QUALITY ASSURANCE	1	1	1	1	1		
	PLANNING	1	1	1	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	2	2	2	
	35 DEPT.	2	2	2	2	2	2	
	P. McNAIR	1	1	1	1	1		
	H. LEVY	1	1	1	1	1		
	NO. WAY							
	NO. WAY							
	NO. WAY							
	NO. WAY							
	STRUCT. SUPER.	2	2	2	2	2	2	
	OPTICAL DETAIL-48	2	2	2	2	2	2	
	WET DOCK							
MACH'Y & OUTFIT.	PIPE SHOP-52	4	4	4	4	4	4	
	OUTFIT. #1 PIER	1	1	1	1	1	1	
	PIPE DRAFT.-52	2	2	2	2	2	2	
	BOILER SHOP-58	1	1	1	1	1	1	
	OUTSIDE MACH.-60	1	1	1	1	3	3	
	Q-MAT'L	1	1	1	1	1	1	
	ELECTRIC SHOP-70							
	SHEET MET. SHOP-74							
	COPPER SHOP-51							
	PAINT SHOP-75	1	1	1	1	1	1	
OTHER	WELDING							
	SHIP SUPT						1	
	MOLD LOFT-41	1	1	1	1	1	1	
	BRACKET SHOP							
	R. MILLER						1	
	TOTAL YARD DIST.	27	27	27	27	27	28	

-51-ALT. 0
-51-ALT. 1
-51-ALT. 2
-51-ALT. 3
-51-ALT. 4
ALT 5

90 FT

M-4650-181-07-2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-181-07-2

Oct 1980

8X

FRAME 1 OF 4

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
	2																							
	4																							
	2					6	6																	
	2																							
	5																							
	3																							
	3																							
	1																							
	1																							
						3	3																	
	4																							
	9																							
	2																							
	1																							
	2					19	21																	
	2																							
	5																							
	6																							
	4																							
	2					2	2																	
						2	2																	
	2																							
	3																							
	3																							
	2																							
	4																							
	20																							
			1				1																	
	2																							

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TY
502801				FD-200	2	12"	100	110	165	150#	B16.5	FORGED STEEL	A105	FLANGE-WELDING NECK F
				FD-201	4	8"								
				FD-202	14	6"								
				FD-203	2	5"								- SLIP ON
				FD-204	5	6"						FORGED STEEL		
			4	FD-205	9	5"						FORGED STEEL		
502801-D	502801		4	FD-206	5	3"								- SOCK. WELD
502801	502801-A		1	FD-207	3	2½"								-SOCK. WELD
				FD-208	1	1½"								-SLIP-ON
				FD-209	1	13"O.D.×6"								
				FD-210	1	11"O.D.×5"								FLANGE-WELD NECK CAM-LOCK
	502801-C		2	FD-211	6	6"								SLIP ON WELD F&
502801-H			1	FO-212	4	8"								
			1	FO-213	9	5"								SOCK WELD
			1	FO-214	2	2"								SLIP ON WELD
			1	FO-215	1	2½"				300#				
502801	502801-C	502801-E	2,3	FD-216	42	1½"	400	230	600	600#	B16.5	FORGED STEEL	A105	FLANGE-SOCKET WELD
-1X	502801-C		2	FD-217	4	1"								- WELD. NECK
				FD-218	6	2½"				300#				
				FD-219	2	1½"								-SOCKET WELD
				FD-220	20	2"								
				FD-221	21	1½"								
				FD-222	10	1¼"								
				FD-223	10	1"								
				FD-224	4	¾"								
				FD-225	2	½"								-SLIP-ON;FLAT FACED
				FD-226	2	5"				150#				
502801-A			1,4	FD-227	5	3"								
502801-D				FD-228	8	3								
				FD-229	2	2½"								- SOCKET WELD
				FD-230	2	1"								
				FD-231	2	½"								- WELD. NECK
502801-C			1,2	FD-232	4	3"								SOCKET WELD
502801-A			1	FO-233	20	2"				600#				
502801-C			2	FO-234	4	¾"								- WELD NECK
502801-G			4	FO-235	2	3"				300#				

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT	UNIT 2	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
	4																							
	6																							
	9																							
	2																							
	3																							
	1																							
	1																							
	2																							
	1																							
	2					1	1																	
	5																							
	5																							
	4																							
	2					2	2																	
	6																							
	3																							
						2	2																	
	20																							
	2																							
	2																							
	2					16	16																	
						1	1																	
	2																							

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	T
502824	502824-A		1	FD-300	4	8"	100	110	165	150#	B16.21	HYDROIL	MIL-P-20085	⅛" THK. RING GASKET
			1	FO-301	6	6"								
				FD-302	11	5"								
				FD-303	7	3"								
				FD-304	4	2½"								
502824-A			1	FO-305	1	8"								
			1	FO-306	1	6"								
			1	FO-307	2	2"								
			1	FO-308	1	2½"				300#				
502824				FO-309	10	1"	400	230	600	600#	—	STAIN. STEEL	SPEC.-COMM'L.	SPIRAL WOUND GASKET
SUPPLY				FO-310	6	2½"				300#	—			
				FO-311	10	2"					—			
				FD-312	19	1½"					—			
				FD-313	10	1"					—			
				FD-314	6	½"					—			
502824				FD-315	2	5"				150#	B16.21	HYDROIL	MIL-P-20085	⅛" THK. RING GASKET
				FD-316	14	3"								FULL FACE GASKET
				FD-317	17	3"								RING GASKET
				FD-318	4	2"								
				FD-319	4	1"								
				FD-320	2	½"					—	STAIN. STEEL	SPEC.-COMM'L.	SPIRAL WOUND GASKET-CARBON
SUPPLY				FD-321	5	1½"				300#	—			
			5	FD-322	4	¾"					—			
Supply			1	FO-323	20	2"				600#	—			
502824-A			1	FO-324	2	2½"				150#	B16.21	HYDROIL	MIL-P-20085	⅛" THK RING GASKET FULL FACE GASKET
			1	FO-325	2	5"				600#	—	STAIN STL.	SPEC COMM'L	SPIRAL WOUND GASKET
Supply		✓	1,2,3,5	FO-326	34	1½"								
Supply		✓	2	FO-327	4	¾"								
SUPPLY			4	FO-328	2	3"				300#	—			

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT	UNIT 2	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
	12																							
	16																							
	8																							
	8																							
	76																							
	8																							
	144																							
	32																							
	8																							
						24	24																	
	40																							
	40					4	4																	
	16																							
						8	8																	
						8	8																	
	160																							
	8					72	72																	
	16																							

LIST OF STUDS, BOLTS & NUT

REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	HVY. HEX. HD. NUTS SEMI-FINISHED (2) PER STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	HVY. HEX. MATERIAL ASTM	HVY. HEX. DIA.
BOLTS SUPPLY	NUTS Supply			FD-400	12								100	110	A307 GR.B	⅞"
			1	FD-401	16											¾"
				FD-402	56											¾"
			1	FD-403	8											¾"
			1	FD-404	76											⅝"
				FD-405	8											¾"
			1	FD-406	144											¾"
				FD-407	8										A307 GR.B GALV.	⅝"
			1	FD-408	32										A307 GR.B	¾"
502830			1	FO-409	8											5/8"
502829-B			2	FD-423	48	A193 SYM B7	¾"	6"	B18.2.1 & B1.1 UNC-2A	A194 SYM 2H	¾"	B18.2.2 & B1.1 UNC-2B	400	230		
502829				FD-412	32	A193 SYM B7	⅝"	3½"	B18.2.1 B1.1 UNC-2A	A194 SYM 2H	⅝"	B18.2.2 B1.1 UNC-2B				
				FD-413	48		⅞"	3¾"			¾"					
				FD-414	80		⅝"	3¼"			⅝"					
				FD-415	78		¾"	3½"			¾"					
				FD-416	40		½"	2½"			½"					
				FD-417	16		¾"	3¼"			¾"					
				FD-418	8		½"	1¾"			½"					
	J. WINTERLING		5	FD-419	16		⅝"	3"			⅝"					
	J. WINTERLING		5	FD-420	16		⅝"	2¾"			⅝"					
-502829-A			1	FO-421	160		5/8"	4"			5/8"					
	502829-C	502829-E	1,3,5	FO-42[illegible]	152		3/4"	4"			3/4"					
502829-D			4	FO-424	16		3/4"	4½"			3/4"					

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

OCT 1980

8X

BUILDERS PLAN NO. M4650-181-07-2

FRAME 2 OF 4

LIST OF FLANGES

UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	DWG 181-23	DWG 181-07-12	REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	JOB NO.	CODE NO.	SPECIAL NOTES FROM REF. NO. 1	CAT. OR DRWG. NO.
							2	502801				00-200	2	4"	55	50	150	150#	B16.5	FORGED STEEL	A 105	FLANGE - SLIP-ON F.F.D.	DIESEL OIL FILL AND TRANSFER	181		NOS. 90-93	TUBE TURN PT. NO 50
							5		502801-A-H	502801-C&D	1,2,3	00-201	17	3"													50
											4	00-202	3	3"						FORGED STEEL GALV.							50
							4		502801-A		1	00-203	12	2½"						FORGED STEEL		-SOCK. WELD BORE FOR SCH 40 PIPE					50
												00-204	1	2"													150
									502801-C		2	00-205	8	1½"								FLAT FACED F.F.D.					150
									502801-C		2	00-206	8	1"								F.F.D.					150
												00-207	2	¾"													150
												00-208	2	½"													150
								502801-A	502801-F		1,4	00-209	3	1½"								REDUCING					150
											1	00-210	1	6"OD×1½"													150 MIL
						1		502801-H			4	KO-200	1	1½"	—	—	—	150#	B16.5	FORGED ST'L	A-105	FLANGE-SOC-WELD-F&D. BORE FOR SCH 40 PIPE	KEROSENE FILL	411		NOS. 90-93	TUBE TURN #150

LIST OF GASKETS

UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	DWG 181-23	181-07-12	REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	JOB NO.	CODE NO.	REMARKS	CAT. OR DRWG. NO.
							2	502824				00-300	2	4"	55	50	150	150	B16.21	HYDROIL	MIL-P-20085	⅛" THK. RING GASKET	DIESEL OIL FILL AND TRANSFER	181			ANACHOR PACKING CO.
							3				2,3	00-301	13	3"													
							4		502824-A	502801-C	1	00-302	13	2½"													
											1	00-303	2	2"													
									502824-D	502800-F	4	00-304	3	1½"													
												00-305	1	1¼"								FULL FACE GASKET					
									502824-B		2	00-306	6	1"								RING GASKET					
												00-307	2	¾"													
												00-308	2	½"													
						1		502800-F			4	KO-300	1	1½"	—	—	—	150#	B16.21	HYDROIL	MIL-P-20085	⅛" THK. RING GASKET	KEROSENE FILL	411			ANACHOR PACKING CO.

LIST OF STUDS, BOLTS & NUTS

UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	DWG 181-23	DWG 181-07-12	REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	HVY. HEX. HD. BOLTS MATERIAL ASTM	HVY. HEX. HD. BOLTS DIA.	HVY. HEX. HD. BOLTS LGTH.	HVY. HEX. HD. BOLTS ANSI DIM. STD.	HVY. HEX. HD. NUTS MATERIAL ASTM	HVY. HEX. HD. NUTS DIA.	HVY. HEX. HD. NUTS ANSI DIM. STD.	SERVICE	CODE NO.	JOB NO.	REMARKS
								BOLTS	NUTS																								
							44	Supply	Supply		1,3	DO-400	120								55	50	A 307 GR. B	⅝"	3"	B18.2.1 B1.1 UNC-2A	A 307 GR. B	⅝"	B18.2.2 B1.1 UNC-2B	DIESEL OIL FILL & TRANSFER FOR 4", 3", 2½"-150# JOINTS		181	
								502830				DO-401	40											⅝"	2¾"			⅝"		2" 150# JOINTS			
								SUPPLY				DO-402	8											½"	3"			½"		1½" SPECTACLE FLG.			
								502830			1,4	DO-403	32											½"	2¼"			½"		1¼" 150# JOINT & 1½"			
								SUPPLY			2	DO-404	28											½"	2"			½"		1" & ¾" 150# JOINT			
								502830				DO-405	8											½"	1¾"			½"		½" 150# JOINT			
						4		SUPPLY			4	KO-400	4								—	—	A307 GR. B	½"	2¼"	B18.2.1 & B1.1 UNC-2A	A307 GR. B	½"	B18.2.2 B1.1 UNC-2B	KEROSENE FILL FOR 1½", 150# JOINT		411	

PIPING PACKAGE

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9

PIPING PACKAGE

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9

PIPING PACKAGE U

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 8X

BUILDERS PLAN NO. M4650-181-07-2

FRAME 3 OF 4

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	DWG 181-23	DWG 181-07-12	REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM. STD.	MATERIAL	ASTM SPEC.
	2		4				8																	2	502801				00-200	2	4"	55	50	150	150#	B16.5	FORGED STEEL	A105
																								5		502801-A-1X	502801-C&E	1,2,3	00-201	17	3"							
	2		7				2																					4	00-202	3	3"						FORGED STEEL GALV	
																								4		502801-A		1	00-203	12	2½"						FORGED STEEL	
	4		4																										00-204	1	2"							
			1																						-1X	502801-C		2	00-205	8	1½"							
	2						6																			502801-C		2	00-206	8	1"							
							8																						00-207	2	¾"							
							2																						00-208	2	½"							
																									502801-A	502801-F		1,4	00-209	3	1½"							
			3																									1	00-210	1	6"×1½"							
			1																																			
																							1		502801-H			4	KO-200	1	1½"	—	—	—	150#	B16.5	FORGED ST'L	A-105

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	DWG 181-23	181-07-12	REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM. STD.	MATERIAL	ASTM SPEC.
	2		4				8																	2	502824				DO-300	2	4"	55	50	150	150	B16.21	HYDROIL	MIL-P-[illegible]
																								3				2,3	DO-301	13	3"							
	2		6				1																	4		502824-A	502801-C	1	DO-302	13	2½"							
	4		5																									1	DO-303	2	2"							
			2																							502824-D	502800-F	4	DO-304	3	1½"							
			3																										DO-305	7	1¼"							
	2						5																			502824-B		2	DO-306	6	1"							
							6																						DO-307	2	¾"							
							1																						DO-308	2	½"							
																							1		502800-F			4	KO-300	1	1½"	—	—	—	150#	B16.21	HYDROIL	MIL-P-20085

LIST OF

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	DWG 181-23	DWG 181-07-12	REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	PS
																									BOLTS	NUTS												
	2		4				8																	44	Supply	Supply		1,3	DO-400	120								55
	28		44				4																		502830				DO-401	40								
			8																						SUPPLY				DO-402	8								
	4																								502830			1,4	DO-403	32								
			12				20																		SUPPLY			2	DO-404	28								
							28																		502830				DO-405	8								
																							4		SUPPLY			4	KO-400	4								
	16																																					

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-181-07-2

Oct 1980

8X

FRAME 4 OF 4

LIST OF FITTINGS

DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	JOB NO.	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
100	110	40	.406	B16.9	SEAM'L STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW	FUEL OIL FILL & TRANSFER SYSTEM	181	NOTES 90-93	TUBE TURN PT. 401
		80	.500		SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO. 2
		40	[illegible]		SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER				TUBE TURN PT. #490
		40	.365		SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO. 1
		40	.365		SEAM'L. STL. BLACK	A234 GR.WPB	45° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO. 5
		40	[illegible]		SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER				TUBE TURN PT. NO. 90
		40	.322		SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO. 1
		40	.280		SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO. 1
		40	.258		SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO. 1
		40	.203		SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO. 1
		150#	—	—	CAST STEEL-GALV.	A216 GR.WCB	VENT TERM.-FLG'D. W/MONEL FLAME SCREEN BUT W/O COVER			NOTES 67 & 90-93	SIM. TO TATE 52-40F
		—	—	—	STEEL PLATE	A285 GR.B	PLATE CAP - 13¼" DIA. x ½" THK.				—
		40	.280x.258	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER			NOTES 90-93	TUBE TURN PT. NO. 90
		40	.280x.258	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD RED. ELBOW				TUBE TURN PT. NO. 1-R
		3000#		B16.11	FORG. CARB. STL.	A234	HALF COUPLING - SOCKET WELD				BONNEY FORGE
		3000#		B16.11	FORG. CARB. STL.	A234	HALF COUPLING - SOCKET WELD				BONNEY FORGE
		150#		—	STEEL	—	FLANGED DUPLEX STRAINER	TRANSFER SUCTION STRAINER		SEE GEN. NOTE #96	TATE DWG NO. 1-035-3
		40	.216	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW	FILL AND TRANSFER		NOTES 90-93	TUBE TURN PT. NO. 1
		40	.406	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	45° L.R. BUTT WELD ELBOW			175 90-93	TUBE TURN PT. 405
		150#		B16.3	MALL. IRON	A197	SCREWED REDUCING TEE				FLAGG FIG. 1021
		150#		B16.3	MALL. IRON	A197	SCREWED REDUCING TEE				
					STEEL		ADAPTER - ¾"-16UNF-2B x ½" FEM S.W.				
		3000#		B16.11	FORG. CARB. STL.	A234	SCREWED ELBOW	FUEL OIL FILL AND TRANSFER	181	NOTES 175 90-93	BONNEY FORGE
		40	.280x.216	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER			90-93	TUBE TURN PT. NO. 90
		40	.280	B16.9			45° L.R. BUTT WELD ELBOW				#5
		40	.258								#5
		40	.406	B16.9			90° S.R. BUTT WELD ELBOW				TUBE TURN PT #403
		3000#	—	B16.11	FORG. CARB. STL.	A234	HALF COUPLING - SCR'D.		181	175 &	BONNEY FORGE
		40	.322	B16.9	SEAM'L. STL. BLK.	A234 GR.WPB	45° L.R. BUTT WELD ELBOW		181		TUBE TURN PT. NO. 5
400	230	40	.216	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW	FUEL OIL SERVICE SYSTEM	363	NOTES 90-93	TUBE TURN PT. NO. 1
		40	.216		SEAM'L. STL. BLACK	A234 GR.WPB	BUTT WELD TEE				TUBE TURN PT. NO. 20
		40	.216x.154		SEAM'L. STL. BLACK	A234 GR.WPB	BUTT WELD REDUCING TEE				TUBE TURN PT. NO. 22
		40	.216x.203		SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER				TUBE TURN PT. NO. 90
		40	.216		SEAM'L. STL. BLACK	A234 GR.WPB	180° RETURN BEND BUTT WELD				TUBE TURN PT. NO. 7
		80	.276x.218		SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD RED. ELBOW				TUBE TURN PT. NO. 2-R
		150#	—	—	CAST STEEL	A216 GR.WCB	FLG'D. ENDS DUPLEX STRAINER-PLUG TYPE	SERVICE SUCTION STRAINER		SEE GEN. NOTE #96	TATE DWG NO 1-035-3
		3000#	—	B16.11	FORGED STEEL	A234	REDUCING ELBOW - SOCKET WELD	SERVICE SYSTEM		NOTES 90-93	BONNEY FORGE
		80	.276x.200	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER				TUBE TURN PT. NO. 91
		80	.276		SEAM'L. STL. BLACK	A234 GR.WPB	BUTTWELD TEE				TUBE TURN PT. NO. 21
		80	.276		SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO. 2
		3000#	—	B16.11	FORGED STEEL	A234	90° ELBOW-SOCKET WELD				BONNEY FORGE
		3000#	—	B16.11	FORGED STEEL	A234	REDUCING TEE - SOCKET WELD				BONNEY FORGE
		300#	—	—	—	—	FLANGED FLOW METER			VENDOR FURNISHED	W/CENT. CONTROL SYS.
		3000#	—	B16.11	FORGED STEEL	A234	TEE - SOCKET WELD			NOTES 90-93	BONNEY FORGE
		3000#	—		FORGED STEEL		90° ELBOW - SOCKET WELD			90-93	BONNEY FORGE
		3000#	—		FORGED STEEL		REDUCING TEE 2"SW x ¾"FPT x 2"SW			175,90-93	BONNEY FORGE
		80	.276x.218	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER			90-93	TUBE TURN PT. NO. 91
		3000#	—	B16.11	FORGED STEEL	A234	REDUCING TEE - SOCKET WELD			90-93	BONNEY FORGE
		3000#	—	—	FORGED STEEL	A105	THREDOLET RUN & OUTLET, I.P.S.			175,90-93	BONNEY FORGE
		3000#	—	B16.11	FORGED STEEL	A234	PIPE CAP - SCREWED				BONNEY FORGE
		3000#	—		FORGED STEEL		90° ELBOW - SCREWED				BONNEY FORGE
		3000#	—		FORGED STEEL		TEE - SCREWED				BONNEY FORGE
		3000#	—	—	FORGED STEEL	A105	UNION - SCREWED				BONNEY FORGE
		3000#	—	B16.11	FORGED STEEL	A234	REDUCER INSERT			90-93	BONNEY FORGE
		3000#	—	—	FORGED STEEL	A105	UNION - SCREWED			175,90-93	BONNEY FORGE
		—	—	—	—	—	PRESSURE TRANSMITTER			ORDERED BY ELEC. TECH	—
		80	.300x.276	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER			NOTES 90-93	TUBE TURN PT. NO. 91
		3000#	—	B16.11	FORGED STEEL	A234	45° ELBOW - SOCKET WELD				BONNEY FORGE
		80	.276x.218	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD RED. ELBOW				TUBE TURN PT. NO. 24
		3000#	—	—	FORGED STEEL	A105	ELBOLET - THRD. I.P.S. L/R RUN			173,90-93	BONNEY FORGE
		3000#	—	B16.11	FORGED STEEL	A234	TEE - SCREWED			175,90-93	BONNEY FORGE
		3000#	—	—	FORGED STEEL	A105	SOCKOLET RUN & OUTLET, I.P.S.			171,90-93	BONNEY FORGE
		3000#	—	—	FORGED STEEL	A105	THREDOLET 1" TO 36" RUN & OUTLET, I.P.S.			170,90-93	BONNEY FORGE
		—	—	—	—	—	5" DIA. DIAL THERMOMETER RANGE 50-400°F			ORDERED ON REF#3	—
		—	—	—	—	—	4½" DIA. DIAL PRESSURE GAGE RANGE 0-600#			ORDERED ON REF#3	—
		3000#	—	—	FORGED STEEL	A105	THREDOLET RUN & OUTLET, I.P.S.			NOTES 175,90-93	BONNEY FORGE
		3000#	—	—	FORGED STEEL	A105	THREDOLET				BONNEY FORGE
		3000#	—	—	FORGED STEEL	A105	SOCKOLET			171,90-93	BONNEY FORGE
		3000#	—	B16.11	FORGED STEEL	A234	SOCKET WELD COUPLINGS			90-93	BONNEY FORGE
		3000#	—	B16.11	FORGED STEEL	A234	SOCKET WELD COUPLINGS				BONNEY FORGE
		—	—	—	—	—	5" DIA. DIAL THERMOMETER RANGE 0-250°F			ORDERED ON REF#2	—
		3000#	—	B16.11	FORGED STEEL	A234	90° ELBOW - SCREWED			NOTES 175,90-93	BONNEY FORGE
		3000#	—	B16.11	FORGED STEEL	A234	TEE - SOCKET WELD.			90-93	BONNEY FORGE
		6000#	—	B16.14	FORGED STEEL	A105	BUSHING HEXAGON - MPT x FPT				BONNEY FORGE
		3000#	—	—	FORGED STEEL	A105	SOCKOLET RUN & OUTLET, I.P.S.	REMOTE TEMP. IND.		171,90-93	BONNEY FORGE
		—	—	—	—	—	4½" DIA. DIAL PRESSURE GAGE RANGE 0-500#			ORDERED ON REF#3	—
		3000#	—	—	FORGED STEEL	A105	THREDOLET RUN & OUTLET, I.P.S.			NOTES 175,90-93	BONNEY FORGE
		3000#	—	B16.14		A105	PIPE PLUG - SCREWED			90-93	
		40	.258x.216	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER				TUBE TURN PT. NO. 90
		3000#	—	B16.11	FORGED STEEL	A234	REDUCER INSERT - SOCKET WELD				BONNEY FORGE
		—	—	—	STEEL	A-53 TYPE E OR S GR.B	BHD. SLEEVE			—	STD. EF-496 FIG.2
		—	—	—			CLOSE NIPPLE - STD. WT.			—	—
		40	.258x.216	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	CONC. BUTT WELD REDUCER			NOTES 90-93	TUBE TURN PT. NO. 90
		80	.276x.218	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	TEE REDUCING - BUTT WELD				PT. NO. 23
		3000#	—	B16.11	FORGED STEEL	A234	COUPLING - SCREWED			175,90-93	BONNEY FORGE
		—	—	—	VARIOUS	—	OIL IN WATER DETECTOR - MALE N.P.T.	(F.O. STRIPPING OIL OVBD. ALARM)		ELEC. SYM. NO. 450-B	FURN. BY B/W CONTROLS, INC.
		80	.300	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	PIPE CAP - BUTT WELD			NOTES 90-93	TUBE TURN PT. NO. 81
		40	.216	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	45° ELBOW - BUTT WELD LONG RAD.				PT. NO. 5
		—	—	—	STEEL	A519-GR.1015	DECK & BHD. SLEEVE			—	STD. EF-496 FIG. 2
—	—	STD	-	—	STEEL	ABS-GR.A	WELD'G SLEEVE	FILL & TRANSFER	181		EF-496 - FIG #1
—	—		—	—		A519 GR.1015					
—	—		—	—							
—	—		—	—							
—	—		—	—		A53 TYE GR B					
—	—		—	—		A519 GR.1015					
100#	110	3000#	—	—	FORGED STEEL	A105	ELBOLET I.P.S. L/R RUN			NOTES 90-93, 173	BONNEY FORGE
		3000#	—	—			THREDOLET (RUN & OUTLET, I.P.S.)			170	
		40	.216x.154	B16.9	SMLS STL BLK	A234 GR WPB	REDUCER CONCENTRIC BUTT WELD				TUBE TURN PT. NO. 90
		40	.203x.154								
		40	.216x.154	B16.9	SMLS STL BLK	A234 GR WPB	REDUCER CONCENTRIC BUTT WELD	SERVICE			
400	230		—	—	FORGED STEEL	SAE-1020	BACKING RING TYPE "A" (FOR SCH 80 PIPE)		363		EF 358
			—	—			TYPE "B"				
			—	—							
		3000#	-	-	FORGED STL	A-105	ELBOLET THD IPS L/R RUN			NOTES 90-93, 173	BONNEY FORGE
		3000#	-	-	FORGED STL	A-105	ELBOLET THD IPS L/R RUN				
		3000#	-	-	FORGED STL	A-105	ELBOLET S.W. IPS. L/R RUN				
—	—	STD	-	-	STEEL	A519 GR.1015	WELDING SLEEVE			—	EF-496 - FIG #1
—	—	3000#	-	-	FORGED STL	A-105	SOCKOLET RUN & OUTLET IPS			NOTES 90-93, 171	BONNEY FORGE
100	110	—			STEEL	ABS GR.A	BHD SLEEVE		363		EF-496 FIG.2
400	230	3000#		—	FORGED ST'L	A-105	THREDOLET (RUN & OUTLET IPS)			NOTES 90-93 & 170	BONNEY FORGE

8830-511 △

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	2-8-77		1. REVISED DESCRIPTION OF FTGS. FO-510 & DO-519 BY DELETING "INVERTED VENT CHECK" AND INDICATING MONEL FLAME SCREEN IN LIEU OF "BRZ. TRIM." 2. MADE NOTE #67 (REF. #1) APPLICABLE TO FO-510 & TO DO-519 3. INDICATED MONEL FLAME SCREEN FOR DO-520 IN LIEU OF BRZ. TRIM. 4. ADDED COLUMN FOR "JOB NOS." 5. ADDED FITT'G IDENT. NO. FO-589 THRU FO-594 & DO-522 THRU DO-525. 6. REVISED SCH. OF FO-500, FO-502, & FO-518 FROM "STD." TO SCH. 40 AND MFGRS. PT. NO. TO SUIT.	PC RL JJR	G.G. SHARP LTR. DATED 5-18-77
2	7/12/77		1. REVISED LIST OF FITTINGS FOR F.O. SERV. REVISED QTY CHGD.: F.O-504 (3 TO 4), FO-507 (4 TO 9); FO-508 (16 TO 25); FO-509 (1 TO 4), FO-522 (1 TO 2), FO-537 (1 TO 2); FO-539 (10-12) FO-540 (16 TO 20) FO-543 (2-3); DELETE FO-521 ADDED FO 526, FO 528 & FO-595 TO FO-607 INCL. 2. REVISED LIST OF FITTINGS FOR D.O. SER. REVISED QTY CHGD: DO-503 (19 TO 28) DO-525 (10 TO 12); DELETE DO-520 3. ADDED: DO-526 TO DO-554 DO-556 TO DO-563 DO-565, DO-567, DO-568 & DO-569 4. ADDED REF. 4 5. INDICATED "DESIGN CRITERIA" OF F.O. SERV. SYS.	AG	G.G. SHARP LTR. DATED 9-1-77
3	10-4-77		1- INCR THE QTY OF: FO-500 (7-9), FO-522 (2-4), DO-503 (28-36), DO-504 (5-16), DO-522 (20-24), DO-530 (1-11), DO-544 (6-9), DO-545 (2-9), DO-546 (1-5). 2- FOR FO-600 & FO-601 INDICATED SCH 80 IN LEIU OF SCH 40. 3- ADDED FO-608 TO FO-623, DO-570 TO DO-580 & KO-500 TO KO-503 4 DELETED DO-537	PCG	
4	1/24/78		1. ADDED FO-527, FO-624 TO 631, DO-555, DO-581 TO DO 587, KO-504 & KO-505. 2. INCREASED THE QTY. OF: FO-544 (17-19), FO-550 (5-10), FO-587 (2-5), FO-597 (1-2), FO-601 (22-26), FO-611 (4-5), FO-617 (2-4), FO-619 (8-10), FO-620 (2-3), FO-622 (4-5). DO-519 (1-2), DO-532 (1-2), DO-[illegible], DO-568 (2-4), & DO-569 (1-2) & [illegible] 3. REVISED SIZES FOR: FO-566 (1"×¾"×¼" TO 1½"×1¼"×¼"), FO-623 (36-3"×¼" TO 36-10"×½"). DO-533 (3"×¼" TO 3"×½") DO-536 (1½"×1½"×¼" TO 1½"×1½"×½") DO-575 (1"×1"×¼" TO 1"×1"×½") 4. RELEASED RESERVATION ON FO-511. (YIS 4650-22-54)	RHM	1-26-78
5	3-29-78		1. ADDED DO-587, DO-588, FO-632 TO FO-635 (YIS-4650-22-[illegible]) 2. REVISED SIZE FOR FO-599 (¼" TO ½")	RHM	3-31-78
6	6/28/78		1- INCR. QTY OF FO-597 (2-4) PER YIS NO. 4650-22-159 2- ADDED OPT. DET. MK NO. FOR FO-511 3- ADDED KO-506 TO KO-510 & DO-589 & DO-590 (ALT CON'T IN NEXT COL. →)	PCG	

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
6 CONT			4- INCR. QTY OF DO-503 (36-37) & ADDED DO-591 THRU DO-595 PER Y.I.S. NO. 4650-22-150 5- INCR QTY OF DO-525 (12-14) & DO-542 (6-8) PER YIS NO 4650-22-162 6- INCR. QTY OF FO-547 (1-2)	PCG	6-30-78
7	10-3-78 10-17-78		1- ITEM FO-628 CHANGED FROM 600# TO 300# PRESS. SERVICE, AND SPECIAL NOTE ADDED 2- ITEM FO-636 ADDED, PER Y.I.S. N-4650-22-283 3- ITEM FO-637 ADDED 4- ITEM FO-634 INCR. FR. 2 TO 3; DO-545 9 TO 10; DO-551 3 TO 4; DO-575 2 TO 3 5- ITEMS DO-596, DO-597, AND DO-598 ADDED	P.G.	10-24-78
8	2/2/79		1- REVISED REQ'N. NO. & CLARIFIED DESCRIPTION OF FO-585	JJR	2-8-79

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. AS NOTED

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE NOV. 9, 1976
DRAWN F. J. DUERBECK
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-181-07-3
ALT. NO. 8

FITTING LIST FOR F.O. FILL, TRANS, SERVICE & DIESEL OIL PIPING IN MACHINERY SPACE

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	9-27-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
4	M-4650-181-07-12	ARR OF D.O. PIPING 2ND DK & ABOVE AFT OF FR 157
3	M-4650-412-4	SCHEDULE OF GAUGES
2	M-4650-412-3	SCHEDULE OF THERMOMETERS
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

UAO-50226

M-608

	DATE OF ISSUE								
	4650-51	4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
ALTERATION	1	1	2	3	4	5	6	7	8
ENGINEERING DISTRIBUTION	4-18-77	6-6-77	7-21-77	10-19-77	1-31-78	4-6-78	7-11-78	10-26-78	2-12-79
OWNERS	5		5	3	3	3	3	3	3
AMERICAN BUREAU	3								3
LLOYD'S R.S.									
U.S.M.A.									
U.S. NAVY									
U.S.C.G.	3								
JOINER CONT'R.									
OWNER'S INSP.		1	1	1	1	1	1	1	1
AM. BU. INSP.									
LLOYD'S INSP.									
U.S.M.A. INSP.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U.S. NAVY INSP.		[illegible]							
U.S.C.G. INSP.									
HULL DRAFT. - 21	1	1	1	1	1	1	1	1	1
MACH. DRAFT. - 22	2	2	2	2	2	2	2	2	2
ELEC. DRAFT. - 23	1	1	1	1	1	1	1	1	1
OUTFIT. DRAFT. - 25									
ESTIMATING									
J. DOUGHERTY (CTD)	1	1	1	1	1	1	1	1	1
PRODUCTION (SCD)									
ORDER DEPT.									
JOINER CONT. YARD									
WILLIAMS - PLANNING	2								
TOTAL ENG'R. DIST.	[illegible]	7	12	[illegible]	10	10	10	10	13
YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] - OFFICE	1	1	1	1	1	1	1	1	1
J. SIMMONS	1	1	1	1	1	1	1	1	1
PIECE RATE - 11	1	1	1	1	1	1	1	1	1
TEST DEPARTMENT									1
QUALITY ASSURANCE	1	1	1	1	1	1	1	1	1
[illegible] PLANNING	1	1	1	1	1	1	1	1	1
GROUND ASSEMBLY	2	2	2	2	2	2	2	2	2
35 DEPT.	2	2	2	2	2	2	2	2	2
P. McNAIR	1	1	1	1	1	1	1	1	1
H. LEVY	1	1	1	1	1	1	1	1	1
NO. WAY									
NO. WAY									
NO. WAY									
NO. WAY									
STRUCT. SUPER.	2	2	2	2	2	2	2	2	2
OPTICAL DETAIL - 45	2	2	2	2	2	2	2	2	2
WET DOCK									
PIPE SHOP - 52	4	4	4	4	4	4	4	4	4
OUTFIT. #1 PIER	1	1	1	1	1	1	1	1	1
PIPE DRAFT. - 62	2	2	2	2	2	2	2	2	2
BOILER SHOP - 58	1	1	1	1	1	1	1	1	1
OUTSIDE MACH. - 60	2	2	2	2	2	4	4	4	4
Q. MAT'L	1	1	1	1	1	1	1	1	1
ELECTRIC SHOP - 70									
SHEET MET. SHOP - 74									
COPPER SHOP - 51									
PAINT SHOP - 75	1	1	1	1	1	1	1	1	1
WELDING									
DHENSEN									1
MOLD LOFT - 41	1	1	1	1	1	1	1	1	1
BRACKET SHOP									
BROOKS									1
B. MILLER									1
TOTAL YARD DIST.	[illegible]	[illegible]	28	28	28	30	30	31	[illegible]

4650-51-ALT. 1
4650-51-ALT. 2
4650-51-ALT. 3
4650-51-ALT. 4
4650-51-ALT. 5
4650-51-ALT. 6
4650-51-ALT. 7

M-4650-181-07-3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-181-07-3

Oct 1980

8X

FRAME 1 OF 6

LIST OF FI

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION										REQUISITION NO.			ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.
UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10								P.S.I.	°F					
	4						2	2	1	502802 A	502802-D		1,5	FO-500	9	12"	100	110	40	.406	B16.9	SEAM'L STL BLACK	A234 GR.WPB
										SUPPLY				FO-501	2	8"			80	.500		SEAM'L STL BLACK	A234 GR.WPB
	1									502802			1	FO-502	1	12"x8"			40	.406x.322		SEAM'L STL BLACK	A234 GR.WPB
	3									SUPPLY				FO-503	3	10"			40	.365		SEAM'L STL BLACK	A234 GR.WPB
									4	502802	502802-B		2	FO-504	4	10"			40	.365		SEAM'L STL BLACK	A234 GR.WPB
	1									↓				FO-505	1	10"x8"			40	.365x.322		SEAM'L STL BLACK	A234 GR.WPB
	5									SUPPLY				FO-506	5	8"			40	.322		SEAM'L STL BLACK	A234 GR.WPB
	9												2	FO-507	9	6"			40	.280		SEAM'L STL BLACK	A234 GR.WPB
5	20												2	FO-508	25	5"			40	.258		SEAM'L STL BLACK	A234 GR.WPB
	4									↓			2	FO-509	4	2½"			40	.203	↓	SEAM'L STL BLACK	A234 GR.WPB
										502800-B			1	FO-510	1	3"			150#	—	—	CAST STEEL-GALV.	A216 GR.WCB
						2	2			~~RES.~~	UAO-50226		4,6	FO-511	4	13½" DIA. x ½" THK.			—	—	—	STEEL PLATE	A285 GR.B
	1									502802				FO-512	1	6"x5"			40	.280x.258	B16.9	SEAM'L STL BLACK	A234 GR.WPB
										↓				FO-513	2	6"x5"			40	.280x.258	B16.9	SEAM'L STL BLACK	A234 GR.WPB
	4									502803				FO-514	5	½"			3000#		B16.11	FORG. CARB. STL.	A234
	2									↓				FO-515	3	¾"			3000#		B16.11	FORG. CARB. STL.	A234
	1									500022				FO-516	1	6"			150#		—	STEEL	—
	3									SUPPLY				FO-517	5	3"			40	.216	B16.9	SEAM'L STL BLACK	A234 GR.WPB
	2							2	3	502802			1	FO-518	7	12"			40	.406	B16.9	SEAM'L STL BLACK	A234 GR.WPB
										502803				FO-519	1	1"x¾"x¾"			150#		B16.3	MALL. IRON	A197
										↓				FO-520	2	[illegible]			150#		B16.3	MALL. IRON	A197
										~~RES.~~			2	~~FO-521~~	~~2~~							~~STEEL~~	
	4									SUPPLY			2,3	FO-522	4	¾"			3000#		B16.11	FORG. CARB. STL.	A234
										502802				FO-523	1	6"x3"			40	.280x.216	B16.9	SEAM'L STL BLACK	A234 GR.WPB
	1									↓				FO-524	2	6"			40	.280	B16.9	↓	↓
	1									↓				FO-525	2	5"			40	.258	↓	↓	↓
	1									502802-B			2	FO-526	1	12"			40	.406	B16.9	↓	↓
	1									SUPPLY			4	FO-527	1	¾"			3000#	—	B16.11	FORG. CARB. STL.	A234
	1									502802-F			2	FO-528	1	8"	↓	↓	40	.322	B16.9	SEAM'L STL. BLK.	A234 GR.WPB
	16									SUPPLY				FO-529	23	3"	400	230	40	.216	B16.9	SEAM'L STL BLACK	A234 GR.WPB
	3									502802				FO-530	8	3"			40	.216		SEAM'L STL BLACK	A234 GR.WPB
										↓				FO-531	2	3"x3"x2"			40	.216x.154		SEAM'L STL BLACK	A234 GR.WPB
	2													FO-532	2	3"x2½"			40	.216x.203		SEAM'L STL BLACK	A234 GR.WPB
														FO-533	1	3"			40	.216		SEAM'L STL BLACK	A234 GR.WPB
	2									↓				FO-534	4	2½"x2"			80	.276x.218	↓	SEAM'L STL BLACK	A234 GR.WPB
	1									500022				FO-535	1	5"			150#	—	—	CAST STEEL	A216 GR.WCB
										502803				FO-536	1	½"x¼"			3000#	—	B16.11	FORGED STEEL	A234
	2									502802	502802-B		2	FO-537	2	2½"x1½"			80	.276x.200	B16.9	SEAM'L STL BLACK	A234 GR.WPB
	2									↓	502802-E			FO-538	5	2½"			80	.276		SEAM'L STL BLACK	A234 GR.WPB
	12									SUPPLY			2	FO-539	12	2½"			80	.276	↓	SEAM'L STL BLACK	A234 GR.WPB
	15									↓			2	FO-540	20	2"			3000#	—	B16.11	FORGED STEEL	A234
										502803				FO-541	4	2"x2"x1½"			3000#	—	B16.11	FORGED STEEL	A234
	1									500087				FO-542	1	1½"			300#	—	—	—	—
	7									SUPPLY				FO-543	7	2"			3000#	—	B16.11	FORGED STEEL	A234
	4	2	2				6	5		↓			4	FO-544	19	1½"			3000#	—		FORGED STEEL	
										502803				FO-545	1	—			3000#	—	↓	FORGED STEEL	↓
										502802				FO-546	2	2½"x2"			80	.276x.218	B16.9	SEAM'L STL BLACK	A234 GR.WPB
	1		1							502803			6	FO-547	2	2½"x2½"x1½"			3000#	—	B16.11	FORGED STEEL	A234
								1		502805				FO-548	1	1½"-1½"x½"			3000#	—	—	FORGED STEEL	A105
						1	1			502803-D			5	FO-549	2	½"			3000#	—	B16.11	FORGED STEEL	A234
		1	1			4		4		SUPPLY			4	FO-550	10	¾"			3000#	—		FORGED STEEL	
			1							↓				FO-551	1	¾"x¾"x¾"			3000#	—	↓	FORGED STEEL	↓
	1	1	2											FO-552	8	¾"			3000#	—	—	FORGED STEEL	A105
	2													FO-553	2	2"x1"			3000#	—	B16.11	FORGED STEEL	A234
										SUPPLY				FO-554	4	½"			3000#	—	—	FORGED STEEL	A105
										—	—	—		FO-555	4	½"			—	—	—	—	—
										502802				FO-556	1	3"x2½"			80	.300x.276	B16.9	SEAM'L STL BLACK	A234 GR.WPB
										SUPPLY				FO-557	5	2"			3000#	—	B16.11	FORGED STEEL	A234
										502802				FO-558	1	2½"x2"			80	.276x.218	B16.9	SEAM'L STL BLACK	A234 GR.WPB
										502805				FO-559	2	3"x¾"			3000#	—	—	FORGED STEEL	A105
										SUPPLY				FO-560	2	½"			3000#	—	B16.11	FORGED STEEL	A234
	1									502805				FO-561	2	2½"x1"			3000#	—	—	FORGED STEEL	A105
	1									↓				FO-562	2	1"			3000#	—	—	FORGED STEEL	A105
										—	—	—		FO-563	3	5" DIA.			—	—	—	—	—
										—	—	—		FO-564	2	4½" DIA.			—	—	—	—	—
										502805-D				FO-565	2	2½"x½"			3000#	—	—	FORGED STEEL	A105
								1		502805			4	FO-566	1	1¼"x1¼"x½"			3000#	—	—	FORGED STEEL	A105
										↓				FO-567	1	3"x¼"			3000#	—	—	FORGED STEEL	A105
										SUPPLY				FO-568	1	½"			3000#	—	B16.11	FORGED STEEL	A234
			2							↓				FO-569	8	2"			3000#	—	B16.11	FORGED STEEL	A234
										—	—	—		FO-570	1	5" DIA.			—	—	—	—	—
										SUPPLY				FO-571	3	½"			3000#	—	B16.11	FORGED STEEL	A234
										↓				FO-572	2	½"			3000#	—	B16.11	FORGED STEEL	A234
										502803				FO-573	2	¾"x½"			6000#	—	B16.14	FORGED STEEL	A105
										502805				FO-574	1	2"x¾"			3000#	—	—	FORGED STEEL	A105
										—	—	—		FO-575	2	4½" DIA.			—	—	—	—	—
	1									502805				FO-576	1	3"x2"			3000#	—	—	FORGED STEEL	A105
										SUPPLY				FO-577	2	½"			3000#	—	B16.14	↓	A105
	2									502802				FO-578	8	5"x3"			40	.258x.216	B16.9	SEAM'L STL. BLACK	A234 GR.WPB
	5									SUPPLY				FO-579	5	2"x1½"			3000#	—	B16.11	FORGED STEEL	A234
								1		UAO				FO-580	2	1"			—	—	—	STEEL	A-53 TY.E OR S GR.B
										SUPPLY				FO-581	3	1"			—	—	—	↓	↓
										502802				FO-582	2	5"x3"			40	.258x.216	B16.9	SEAM'L STL. BLACK	A234 GR.WPB
	3									502802-1X	502802-B		2	FO-583	3	2½"x2½"x2			80	.276x.218	B16.9	SEAM'L STL. BLACK	A234 GR.WPB
	1									SUPPLY				FO-584	1	2"			3000#	—	B16.11	FORGED STEEL	A234
	1									23-500167			8	FO-585	1	2"			—	—	—	VARIOUS	—
										502802				FO-586	2	3"			80	.300	B16.9	SEAM'L STL. BLACK	A234 GR.WPB
	5									502802-EX	502802-G		4	FO-587	5	3"			40	.216	B16.9	SEAM'L STL. BLACK	A234 GR.WPB
										UAO				FO-588	3	3"	↓	↓	—	—	—	STEEL	A519-GR.1015
	14				1		4		11	*UAO			1	FO-589	35	12"	—	—	STD	-	—	STEEL	ABS-GR.A
	8				1				8	↓			1	FO-590	20	10"	—	—		—	—		A519 GR.1015
	10												1	FO-591	20	8"	—	—		—	—		
	18												1	FO-592	20	6"	—	—		—	—		
10	30												1	FO-593	60	5"	—	—		—	—		A53 TY.E GR.B
8	46									↓	50226		1	FO-594	100	3"	—	—	↓	—	—	↓	A519 GR.1015
	1									502805-A			2	FO-595	1	5"x2½"	100#	110	3000#	—	—	FORGED STEEL	A105
	4									502805-A			2	FO-596	4	¼"			3000#	-	—	↓	↓
	4									502802-B	502802-E	502802-F 502802-G	2,4,6	FO-597	4	3"x2"			40	.216x.154	B16.9	SMLS STL BLK	A234 GR WPB
	1									↓			2	FO-598	1	2½"x2"			40	.203x.154	↓	↓	↓
	1									↓			2	FO-599	1	3"x2"	↓	↓	40	.216x.154	B16.9	SMLS STL BLK	A234 GR WPB
	4									502811-A			2,3	FO-600	4	2½"	400	230	—		—	FORGED STEEL	SAE-1020
	26									↓	502811-B		2,3,4	FO-601	26	2½"			—		—		
	2									502811			2	FO-602	2	2"			—		—	↓	↓
	2									502805-A			2	FO-603	2	2½"x1"			3000#	-	-	FORGED STL	A-105
	2									↓			2	FO-604	2	3"x1"			3000#	-	-	FORGED STL	A-105
	2									↓			2	FO-605	2	2½"x1"	↓	↓	3000#	-	-	FORGED STL.	A-105
	48									UAO			2	FO-606	48	3"	—	—	STD	-	-	STEEL	A519 GR.1015
	1									502805-A			2	FO-607	1	2"x½"	—	—	3000#	-	-	FORGED STL	A-105
	2									*UAO			3	FO-608	2	12"	100	110	—			STEEL	ABS GR.A
	2									502805-B			3	FO-609	2	1¼"x1"	400	230	3000#		—	FORGED ST'L	A-105

MANUFACTURER DWG OR FIG. NO. OR EQUAL

- TUBE TURN PT.NO.1
- ↓
- BONNEY FORGE
- ↓
- TUBE TURN PT.NO.1
- BONNEY FORGE
- TUBE TURN PT.NO.22
- ↓ PT.NO.1-R
- BONNEY FORGE
- ↓
- TUBE TURN PT.NO.5
- BONNEY FORGE
- ↓
- SIM TO TATE 52-40-F
- SIM TO TATE 52-40-V
- TUBE TURN PT.#90
- EF-496 FIG.1
- ↓ ↓
- BONNEY FORGE
- TUBE TURN PT NO.20
- TUBE TURN PT NO 20
- ↓ PT NOS 90
- PT NO.1-R
- EF496 FIG.1
- MUELLER FIG.761
- BONNEY FORGE
- ↓
- EF-496 FIG.2XH
- TUBE TURN PT NO.22
- TUBE TURN PT.NO.5
- BONNEY FORGE
- EF-496 FIG.2
- TUBE TURN PT NO.22
- TUBE TURN PT.#2
- EF-345 DET 6B FIG#2C
- ↓ DET 6C
- TUBE TURN PT NO.5
- TUBE TURN PT NO.90
- BONNEY FORGE
- BONNEY FORGE
- SEE DET.7-A ON REF.4
- BONNEY FORGE
- FLAGG FIG NO.4145
- BS-2-UC
- TUBE TURN PT#1
- EF-496 FIG 2XH
- BONNEY FORGE
- EF-496 FIG 2
- ↓
- BONNEY FORGE
- ↓
- EF-345
- EF-496 FIG 2
- BONNEY FORGE
- EF-496 FIG 1
- TUBE TURN PT NO 20
- 3
- 3
- ↓ ↓ ↓ ↓ 90
- BONNEY FORGE
- BONNEY FORGE
- BONNEY FORGE
- ↓
- BONNEY FORGE
- ↓
- TATE #58-61 S.W
- —
- BONNEY FORGE
- ↓

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

8X

BUILDERS PLAN NO. M4650-181-07-3

FRAME 2 OF 6

LIST OF FITTINGS

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 9	UNIT 10	UNIT 181	DWG 181-07-12	REQUISITION NO.	REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	JOB NO.	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
			1	SUPPLY				DO-500	9	3"	55	50	40	.216	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW	DIESEL OIL SERVICE	363	NOTES 90-93	TUBE TURN PT.NO.1
			2					DO-501	19	2½"				.203	B16.9							
4	4							DO-502	13	2"			3000#	—	B16.11	FORGED STEEL	A234	90° ELBOW-SOCKET WELD				BONNEY FORGE
	4		3				2,3,6	DO-503	37	1¼"				—								
							3	DO-504	16	1"				—								
								DO-505	11	¾"				—								
								DO-506	13	½"				—								
			3				4	DO-507	8	4"			40	.237	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	90° L.R. BUTT WELD ELBOW				TUBE TURN PT. NO.1
								DO-508	3	¾"x½"			3000#	—	B16.11	FORGED STEEL	A234	REDUCER - SOCKET WELD				BONNEY FORGE
				502802				DO-509	1	3"x3"x2½"			40	.216x.203	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	TEE REDUCING - BUTT WELD				TUBE TURN PT. NO.22
								DO-510	1	3"x2½"				.216x.203	B16.9			90° L.R. ELBOW REDUCING BUTT WELD				PT. NO.1-R
			1	SUPPLY				DO-511	7	1¼"			3000#	—	B16.11	FORGED STEEL	A234	TEE - SOCKET WELD				BONNEY FORGE
								DO-512	4	¾"				—								
								DO-513	2	½"				—								
								DO-514	1	1½"				—								
			1					DO-515	2	1"				—								
				502802				DO-516	1	3"			40	.216	B16.9	SEAM'L. STL. BLACK	A234 GR.WPB	45° L.R. ELBOW BUTT WELD				TUBE TURN PT. NO.5
				SUPPLY				DO-517	6	¾"			3000#	—	B16.11	FORGED STEEL	A234	COUPLING - SOCKETWELD				BONNEY FORGE
								DO-518	1	½"				—	B16.11							
			2	502800-B	502800-N		1,4	DO-519	2	3"			150#	—	—	CAST STL	A216 GR. WCB	VENT TERM. - FLG'D W/MONEL FLAME SCREEN BUT W/O COVER			NOTES 67&90-93	SIM TO TATE 52-40-F
							1,2	~~DO-520~~	~~1~~	~~3~~					—		~~A216 GR. WCB~~	~~VENT TERM.-B.W. W/MONEL FLAME SCREEN BUT W/O COVER~~			90-93	SIM TO TATE 52-40-V
				502802				DO-521	1	1½"x¾"			40	.145x.113	B16.9	SMLS. STEEL BLK.	A234 GR.WPB	BUTT WELD CONC. REDUCER	DIESEL OIL SERVICE			TUBE TURN PT.#90
			5	UAO			1,3	DO-522	24	4"	-	-	STD	—	—	STEEL	A53 TY.E GR.B	WELD'G SLEEVE -				EF-496-FIG.#1
	6		5				1	DO-523	30	3"	—	—		—	—		A519 GR.1015					
			4				1	DO-524	50	2½"	-	-		-	-		A53 TY.E GR.B					
	13			SUPPLY			1,2,6	DO-525	14	1¼	55	50	3000#	—	B16.11	FORGED STEEL	A234	COUPLING - SOCKET WELD			NOTES-90-93	BONNEY FORGE
	1			502802-B			2	DO-526	2	3"			40	.216	B16.9	SMLS. STEEL	A234 GR.WPB	TEE BUTT WELD				TUBE TURN PT NO.20
							2	DO-527	2	2½"				.203				TEE				TUBE TURN PT NO 20
	1			502802-B			2	DO-528	1	3"x2½"				.216x.203				CONC REDUCER				PT NOS 90
							2	DO-529	1	3"x2"				.216x.154				90° RED. ELBOW L.R.				PT NO.1-R
			5	UAO			2,3	DO-530	11	2"			-	—	—	STEEL	A53 TY. E OR S GR. B	WELDING SLEEVE			—	EF496 FIG.1
	1			502808			2	DO-531	1	3"			150#	—	FLGS/B16.5	CAST STEEL	A216, GR-WCB	Y STRAINER FLG'D W/MONEL SCREEN [illegible] PERF.			NOTES 90-93	MUELLER FIG. 761
				502805-A	502805-D		2,4	DO-532	2	3"x1¼"			3000#	—	—	FORGED STL	A-105	SOCKOLET RUN & OUTLET I.P.S.			171,90-93	BONNEY FORGE
				502805-D			2,4	DO-533	1	3"x½"				—	—			THREDOLET RUN & OUTLET I.P.S.			170,90-93	
				502803-A			2	DO-534	1	1½"				—	B16.11			CROSS SOC. WELD			90-93	
							2	DO-535	2	1½"x1¼"				—				RED. INSERT				
				502803-C			2,4	DO-536	1	1½"x1½"x½"				—	B16.11			TEE S.W. x S.W. x SCRD.				
				502803-A			~~2,5~~	~~DO-537~~	~~5~~	~~3/8"~~				—				~~90° ELBOW~~				
							2	DO-538	2	1¼"x½"				—				RED. INSERT SOC. WELD				
							2,8	DO-539	7	1¼"				—				45° ELBOW				
							2	DO-540	2	1¼"x1¼"x3/8"				—				TEE S.W. x S.W. x F.PT.			175,90-93	
							2	DO-541	2	3/4"				—				SCREWED PLUG			90-93	
				Supply			2,6	DO-542	8	1"				—				COUPLING SOC. WELD				
							2	DO-543	1	3/8"				—				COUPLING				
							2,3	DO-544	9	1¼"				—				UNION				
		1	1				2,3,7	DO-545	10	1"				—								
							2,3	DO-546	5	3/4"				—								
							2	DO-547	1	3/8"				—								
			2	UAO			2	DO-548	4	1¼"				—		STEEL	—	BHD SLEEVE				EF-496 FIG. 2XH
				502802-B			2	DO-549	1	4"x4"x2"	55	50	40	.237x.237x.154	B16.9	SML STL BLK	A234 GR WPB	RED. TEE BUTT WELD			NOTES 90-93	TUBE TURN PT NO.22
	1						2	DO-550	2	4"			40	.237	B16.9			45° ELBOW BUTT WELD				TUBE TURN PT. NO. 5
	2	1		—			2,7	DO-551	4	1"			—	—	—	NEOPRENE OR TEFLON W/STAIN STL WIRE BRAID ARMORE	—	HOSE 18"LG W/MPT. XFPT ENDS			NOTE #96	
				502803-A			2	DO552	1	1"x3/4"	55	.50	3000#	—	B16.11	FORGED STL	A-105	COUPLING FPT X SW			NOTES 175,90-93	BONNEY FORGE
				UAO			2	DO-553	1	1¼"			—		—	STEEL	—	DECK SLEEVE 9"LG			—	EF-496 FIG. 2
	1		1	502802-B			2	DO554	1	4"x4"x3"			40	.237x.237x.216	B16.9	SML STL BLK	A234 GR.WPB	RED. TEE B.W.			NOTES 90-93	TUBE TURN PT NO.22
				SUPPLY			4	DO-555	1	3"			80	.300				90° L.R. ELBOW				TUBE TURN PT. #2
			2	UAO			2	DO-556	2	2½"			-	-	-	STEEL	-	FLGD HOSE ADAP W/STRAIGHT PIPE THRD				EF-345 DET 6-B FIG #2c
			2	502803-A			2	DO-557	2	2½"			-	-		BRONZE	B-62	HOSE CAP W/CHAIN				DET 6C
			2	502802-B			2	DO-558	4	2½"			40	.203	B16.9	SMLS. STEEL	A234 GR.WPB	45° ELBOW B.W.			NOTES 90-93	TUBE TURN PT NO. 5
				502802-B			2	DO-559	1	4"x2½"			40	.237x.203	B16.9	SMLS STL BLK	A234 GR WPB	CONC REDUCER BUTT WELD				TUBE TURN PT NO. 90
				502805-A			2	DO-560	1	2½x1¼			3000#	—	—	FORGED STL	A 105	SOC WELD ELBOLET I.P.S. 4R RUN			173,90-93	BONNEY FORGE
							2	DO-561	1	4"x½"			3000#	—	—	FORGED STL	A-105	SOC WELD ELBOLET I.P.S. 4R RUN			173,90-93	BONNEY FORGE.
			1	* UAO			2	DO-562	42 SQ FT	5/16" THK			—	—	—	STEEL	ABS GR. A	OIL SPILL CONTAINMENT ([illegible])				SEE DET. 7-A ON REF. 4
			2	Supply			2	DO-563	2	1"			3000#	—	B16.11	FORGED STL	A-234	HALF COUPLING			NOTES 90-93	BONNEY FORGE
								DO-564														
			1	Supply			2	DO-565	1	1"			125#	—	B16.15	CAST BRONZE	B-62	CAP SCRD.			NOTES 90-93	FLAGG FIG NO. 4145
								DO-566														
				CUTTINGS			2	DO-567	1	1¼"			150#	—	—	STEEL	ABS GR.A	SPECTACLE FLANGE				BS-2-UC
			4	Supply			2,4	DO-568	4	3"			40	.216	B16.9	BLACK SMLS. STL.	A234 GR WPB	90° ELBOW L.R.B.W.			NOTES 90-93	TUBE TURN PT #1
			2	UAO			2,4	DO-569	2	3"			—	—	—	STEEL	A519 GR.1015	DECK SLEEVE 9"LG BLACK				EF-496 FIG 2XH
				Supply			3	DO-570	1	2"			3000#		B16.11	FORGED ST'L	A-234	COUPLING SOCKET WELD		363	NOTES 90-93	BONNEY FORGE
	1			UAO			3	DO-571	2	3"			—	—	—	STEEL	A519 GR.1015	BHD SLEEVE				EF-496 FIG 2
							3	DO-572	4	1"			—	—	—		A53 TY. E OR S GR. B					
							3	DO-573	3	3/4"			—	—	—							
				502803-B			3	DO-574	1	1¼"x1¼"x1"			3000#		B16.11	FORGED ST'L	A234	S.W TEE			NOTES 90-93	BONNEY FORGE
		1		502803-C	502803-A		3,4,7	DO-575	3	1"x1"x½"				—								
				Supply			3	DO-576	1	2"				—								
				'UAO			3	DO-577	2	1"			—	—	—	STEEL	—	SCR'D PIPE NIPPLE W/CAP & CHAIN DET 6-A ITEM 6 & DET 6-C				EF-345
				UAO			3	DO-578	2	2½"			—	—	—		A53 TY. E OR S GR. B	DK SLEEVE				EF-496 FIG 2
							3	DO-579	1	1"			3000#	—	B16.11	FORGED ST'L	A234	COUPLING FPT x S.W			NOTES 175,90-93	BONNEY FORGE
			5	UAO			3	DO-580	5	1¼"			—	—	—	STEEL	A53 TY. E OR S GR. B	WELD SLEEVE				EF-496 FIG 1
			1	502802-5			4	DO-581	1	4"			40	.237	B16.9	SMLS. STL.	A234 GR.WPB	TEE BUTT WELD		363	NOTES 90-93	TUBE TURN PT NO 20
			1				4	DO-582	1	4"								90° S.R. ELBOW				3
			1				4	DO-583	1	3"				.216								3
			1				4	DO-584	1	4"x3"				.237x.216				CONC. RED.				90
			6	SUPPLY			4	DO-585	6	1¼"			3000#	—	B16.11	FORGED STL.	A105	UNIONS S.W.				BONNEY FORGE
							4	DO-586	1	¾"				—			A234	HALF COUPLING - SCR'D.			175,90-93	BONNEY FORGE
				Supply			3	FO-610	2	1"	100	110	3000#	—	B16.11	FORGED ST'L	A-234	TEE - SOCK WELD		363	NOTES 90-93	BONNEY FORGE
							3,4	FO-611	5	1"				—				90° ELBOW SOCK. WELD				
				502803-B			3	FO-612	2	1"				—				CAP SCRD.			175,90-93	
				Supply			3	FO-613	4	1"				—				UNION - S.W			90-93	
							3	FO-614	2	1"				—				COUPLING S.W.				
				502805-B			3	FO-615	2	36x12x1"				—			A105	SOCKOLET I.P.S. RUN & OUTLET	SEE DET. "9-A" ON M4650-111-22		171,90-93	
				* · UAO			3	FO-616	8				—	—	—	STEEL	ABS GR.A	2"x2"x3/8" L 6" LG	SEE DET. "9-A" ON M4650-111-22			
				* UAO			3,4	FO-617	4				—	—	—		ABS GR.A	54"x12"x5/16 PLATE	" " " " " "			
				502803-B			3	FO-618	8	1½"x1½"x¾"	400	230	3000#	—	B16.11	FORGED ST'L	A-234	REDUCING TEE S.W.		363	NOTES 90-93	BONNEY FORGE
				Supply			3,4	FO-619	10	1½"				—				TEE S.W.				
				502805-B	502805-D		3,4	FO-620	3	1½x1"					—		A105	THREDOLET I.P.S. RUN & OUTLET			170,90-93	
				502803-B			3	FO-621	2	¾"x1½"x¾"					B16.11		A234	REDUCING TEE - S.W.			90-93	
				Supply			3,4	FO-622	5	1½"								COUPLING S.W.				
				502805-D			3,4	FO-623	2	36x10x½"							A105	THREDOLET I.P.S. RUN & OUTLET			170,90-93	
				502803-C			4	FO-624	2	1½"								CROSS - S.W.		363	NOTES 90-93	
				502814			3	KO-500	2	1½"	—	—	—	—	—	STAIN. ST'L	A351 GR. CF8	SOUNDING TUBE - DECK PLATE S.W. W/BRT. PLUG		363	NOTES 90-93	TATE #58-61 S.W
				Supply			3	KO-501	2	1½"	—	—	—	—	—	STEEL	A-106 GR B	NIPPLE - 2½" LG. THRD.				—
				Supply			3	KO-502	2	1½"x1"	—	—	3000#	—	B16.11	FORGED ST'L	A234	REDUCER - S.W.			NOTES 90-93	BONNEY FORGE
				Supply			3.	KO-503	15	1"	—	—		—				COUPLING - S.W.				

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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. M4650-181-07-3

FRAME 3 OF 6

LIST OF FITTINGS

CH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	JOB NO.	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG.OR FIG.NO. OR EQUAL
00#	–	B16.11	FORGED STL	A 234	90° ELBOW S.W.		363	NOTES 90-93	BONNEY FORGE
00#	–	B16.11	↓	A 234	TEE S.W		↓	↓	↓
00#	–	B16.11		A 105.	UNION S.W.				
0#	–	B16.11		A 234	RED. INSERT S.W.				
00#	–	B16.11	↓	A 234	↓ ↓				
00#	–	–	FORGED STL.	A105	ELBOLET RUN & OUTLET; I.P.S.	(4" B/W OUTLET)		↓ 173, 90-93	↓
0#	–	B16.5	STEEL	—	FLGD. FLOW METER	F.O. SERVICE		FLOW TECHNOLOGY INC.	FURNISHED BY TANO
0#	–	B16.11	FORGED STL	A 234	SCRD. COUPLING			NOTES 90-93	BONNEY FORGE
	–	B2.1			3/4" FEM. NPT x 1/2" MALE NPT RED. ADAPTER				CAJON #12-RA-8.
	–	↓	↓	↓	3/4" MALE NPTF x 3/4" FEM. NPSM UNION			↓	ANCHOR #12M-12UFS
0	.145	B16.9	SEAMLESS STL.	A234 GR. WPB	REDUCER CONC. BUTT WELD			NOTES 90-93	TUBE TURN PT.#90
00#	–	–	FORGED STL.	A105	SOCKOLET IPS RUN & OUTLET				BONNEY FORGE
00#	–	–	↓	↓	↓ ↓			↓	↓
-	–	–	STEEL	A53 TY. 1 OR S GR. B	WELDING SLEEVE		↓		BETH STD EF-496 FIG #1
00#	—	B16.11	FORGED STL.	A-105	90° RED. ELBOW				BONNEY FORGE
—	—	—	STAINLESS STL.	—	FLEXIBLE CORR. HOSE				—
00#		B16.14	FORGED STEEL	A 105	BUSHING SCRD.		363	NOTES 90-93	BONNEY FORGE
		B16.11	↓	↓	CAP SCRD.		↓	↓	↓
—	—	—	MECH. TUBE	A519 GR. 1020 HR	DK. SLEEVE 4" LG				BETH STD EF-496 FIG 2 & H
0#	—	B16.11	F. STEEL	A 234	SCR'D CAP			NOTES 90-93	BONNEY FORGE
	—	B16.11	FORGED ST'L	A-234	ELBOW 90° S.W.				
	—	↓	↓	↓	↓ 45° ↓				
		↓	↓	↓	INSERT ↓			↓	↓
		—	STEEL	A53 TY. E or S, GR B	PENET. SLEEVE				BETH STD EF-496 FIG 2
		—	↓	ABS-GR A	6" DIA x 1/2" THK PLATE		363	SEE DET. "14-D" M4650-111-18	—
00#	—	B16.11	FORGED STL.	A105	UNION-SCRD.			NOTES 90-93	BONNEY FORGE
—	—	—	STL.	A53 TY. E OR S GR. B	JOINT SLEEVE				STD. EF496-FIG.1
—	—	—	↓	↓	DECK SLEEVE-10" LONG		↓		↓ -FIG.2
0#	-		CAST STL-GALV.	A216-GR WCB	INVERT'D VENT CHK. VLV.-FLGD, F&D W/O COVER	MONEL FLAME SCREENS	411	NOTES 67, 90-93	TATE-52-20F
00#	-	B16.11	FORGED ST'L	A234	90° ELBOW S.W.			90-93	BONNEY FORGE
		↓	↓	↓	COUPLING S.W.			↓ ↓	↓ ↓
		—	STEEL	A53, TY E or S, GR. B	DK. PENET. SLEEVE -16" LONG				BETH. STD EF-496 FIG
		—	↓	↓	↓ ↓ 9" ↓		↓		↓

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	3		5						
	6		1				1	4	4
							7		4
	1		28				5		
			8				8		
			4				4		
			6						
	5								
	1		3				1		
							1		
	1								
			3						
	12				1				6
	8		17						
	15		6		2		3		13
			10		1		2		1
			2						
			1						1
			1						
			1						
	1		1				3		1
			1						
			2						
			1						
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			1						
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						1	1		
						1	1		
						9	6		

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FRAME 4 OF 6

LIST OF FITTINGS

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION
SUPPLY				4	KO-504	10	1"			3000#	–	B16.11	FORGED STL	A 234	90° ELBOW S.W.
↓				4	KO-505	1	1"			3000#	–	B16.11	↓	A 234	TEE S.W
↓				4	DO-587	5	2"			3000#	–	B16.11	↓	A 105	UNION S.W.
↓				4	FO-625	4	1½"x1"	400	230	3000#	–	B16.11	↓	A 234	RED. INSERT S.W.
↓				4	FO-626	4	1½"x¾"	400	230	3000#	–	B16.11	↓	A 234	↓ ↓
502805-D				4	FO-627	1	4"x10"	100	110	3000#	–	–	FORGED STL.	A105	ELBOLET RUN & OUTLET
500087				4,7	FO-628	2	¾"			300#	–	B16.5	STEEL	—	FLGD. FLOW METER
SUPPLY				4	FO-629	12	¾"	400	230	3000#	–	B16.11	FORGED STL	A 234	SCRD. COUPLING
502803-C				4	FO-630	6	¾"x½"	↓	↓	↓	–	B2.1	↓	↓	¾" FEM. NPT x ½" MALE NPT RED.
↓				4	FO-631	6	¾"x¾"	↓	↓	↓	–	↓	↓	↓	¾" MALE NPTF x ¾" FEM. NPSM UN
502802-H				5	FO-632	1	3"x1½"	100	110	40	.216 x.145	B16.9	SEAMLESS STL.	A234 GR. WPB	REDUCER CONC. BUTT
502805-F				5	FO-633	1	3"x1½"	↓	↓	3000#	–	–	FORGED STL.	A105	SOCKOLET IPS RUN & OUTLET
502805-F	502805-G			5,7	FO-634	3	3½/3"x1"	↓	↓	3000#	–	–	↓	↓	↓ ↓
UAO				5	FO-635	1	1½"	↓	↓	—	–	–	STEEL	A53 TY. E OR S GR. B	WELDING SLEEVE
502803-F				7	FO-636	6	¾"x½"	400	230	3000#	—	B16.11	FORGED STL.	A-105	90° RED. ELBOW
500001				7	FO-637	6	¾"	↓	↓	—	—	—	STAINLESS STL.	—	FLEXIBLE CORR. HOSE
502805-D				5	DO-587	2	1"x½"	55	50	3000#		B16.14	FORGED STEEL	A 105	BUSHING SCRD.
↓				5	DO-588	2	½"	55	50	↓		B16.11	↓	↓	CAP SCRD.
UAO				6	DO-589	1	2"	—	—	—	—	—	MECH. TUBE	A519 GR. 1020, HR	DK. SLEEVE 4" LG
502803-E				6	DO-590	1	2"	—	—	3000#	—	B16.11	F. STEEL	A 234	SCR'D CAP
SUPPLY				6	DO-591	2	1½"	55	50		–	B16.11	FORGED ST'L	A-234	ELBOW 90° S.W.
SUPPLY				6	DO-592	1	1½"	↓	↓	↓	—	↓	↓	↓	↓ 45° ↓
SUPPLY				6	DO-593	1	1½"x1¼"	↓	↓	↓	—	↓	↓	↓	INSERT
UAO-50226				6	DO-594	1	1½"	↓	↓	—	—	—	STEEL	A53 TY. E or S, GR. B	PENET. SLEEVE
UAO-50226	STL FROM CUTTINGS			6	DO-595	1	—	↓	↓	—	—	—	↓	ABS-GR.A	6" DIA x ½" THK. PLATE
SUPPLY				7	DO-596	3	½"	↓	↓	3000#	—	B16.11	FORGED STL.	A105	UNION-SCRD.
UAO				7	DO-597	6	1"	↓	↓	—	—	—	STL.	A53 TY. E OR S GR. B	JOINT SLEEVE
↓				7	DO-598	1	1"	↓	↓	—	—	—	↓	↓	DECK SLEEVE-10" LONG
502800-T				6	KO-506	1	1½"			150#	–		CAST STL-GALV.	A216-GR. WCB	INVERT'D VENT CHK. VLV.-FLGD, F&D W
SUPPLY				6	KO-507	2	1½"			3000#	–	B16.11	FORGED ST'L	A234	90° ELBOW S.W.
↓				6	KO-508	2	1½"			↓	–	↓	↓	↓	COUPLING S.W.
UAO				6	KO-509	1	1½"			–		–	STEEL	A53, TY. E OR S, GR. B	DK. PENET. SLEEVE -16" LONG
↓				6	KO-510	1	1½"			–		–	↓	↓	↓ 9" ↓

PIPING PACKAGE UNIT APPLICATION / STRUCTURAL MODULAR UNIT APPLICATION

FITTING IDENT. NO.	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20	UNIT	UNIT 2	UNIT	UNIT 4	UNIT	UNIT	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	DWG 181-23	DWG. 181-07-12
KO-504																											10																		
KO-505																											1																		
DO-587																																													5
FO-625																												2																	
FO-626																											2	2																	
FO-627																																													1
FO-628																											1	1																	
FO-629																											6	6																	
FO-630																											3	3																	
FO-631																											3	3																	
FO-632																						1																							
FO-633																						1																							
FO-634																						2																						1	
FO-635																						1																							
FO-636																											3	3																	
FO-637																											3	3																	
DO-587																											1	1																	
DO-588																											1	1																	
DO-589																												1																	
DO-590																																													
DO-591																								2																					
DO-592																								1																					
DO-593																								1																					
DO-594																								1																					
DO-595																								1																					
DO-596																																												3	
DO-597																																												6	
DO-598																																												1	
KO-506																																												1	
KO-507																																												2	
KO-508																																												2	
KO-509																																												1	
KO-510																																												1	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980

8X

BUILDERS PLAN NO. M4650-181-07-3

FRAME 5 OF 6

PIPING PACKAGE UNIT APPLICATION																				STRUCTURAL MODULAR UNIT APPLICATION																							DWG		REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM. STD	MATE
UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20	UNIT	UNIT 2	UNIT	UNIT 4	UNIT	UNIT	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181-23	DWG. 181-07-12									P.S.I.	°F				
																										10																			SUPPLY				4	KO-504	10	1"			3000#	–	B16.11	FORGE
																										1																							4	KO-505	1	1"			3000#	–	B16.11	
																																												5					4	DO-587	5	2"			3000#	–	B16.11	
																											2																						4	FO-625	4	1½"x1"	400	230	3000#	–	B16.11	
																										2	2																		↓				4	FO-626	4	1½"x¾"	400	230	3000#	–	B16.11	↓
																																												1	502805-D				4	FO-627	1	4"x10"	100	110	3000#	–	–	FORGE
																										1	1																		500087				4,7	FO-628	2	¾"			300#	–	B16.5	STE
																										6	6																		SUPPLY				4	FO-629	12	¾"	400	230	3000#	–	B16.11	FORGE
																										3	3																		502803-C				4	FO-630	6	¾"x½"				–	B2.1	
																										3	3																		↓				4	FO-631	6	¾"x¾"	↓	↓	↓	–	↓	↓
																					1																								502802-H				5	FO-632	1	3"x1½"	100	110	40	.216 .145	B16.9	SEAMLES
																					1																								502805-F				5	FO-633	1	3"x1½"			3000#	–	–	FORGED
																					2																						1		502805-F	502806-G			5,7	FO-634	3	¾/⅜"x1"			3000#	–	–	↓
																					1																								UAO				5	FO-635	1	1½"	↓	↓	–	–	–	STEE
																										3	3																		502803-F				7,	FO-636	6	¾"x½"	400	230	3000#	—	B16.11	FORGED
																										3	3																		500001				7	FO-637	6	¾"	↓	↓	—	—	—	STAINLES
																										1	1																		502805-D				5	DO-587	2	1"x½"	55	50	3000#		B16.14	FORGED
																										1	1																		↓				5	DO-588	2	½"	55	50	↓		B16.11	↓
																											1																		UAO				6	DO-589	1	2"	—	—	—	—	—	MECH. TU
																																													502803-E				6	DO-590	1	2"	—	—	3000#	—	B16.11	F. STEE
																							2																						SUPPLY				6	DO-591	2	1½"	55	50		—	B16.11	FORGED
																							1																						SUPPLY				6	DO-592	1	1½"				—		
																							1																						SUPPLY				6	DO-593	1	1½"x1¼"			↓	—	↓	↓
																							1																						UAO-50226				6	DO-594	1	1½"			—	—	—	STEEL
																							1																						UAO-50226	STL FROM CUTTINGS			6	DO-595	1	—			—	—	—	↓
																																											3		SUPPLY				7	DO-596	3	½"			3000#	—	B16.11	FORGED ST
																																											6		UAO				7	DO-597	6	1"			—	—	—	STL.
																																											1		↓				7	DO-598	1	1"	↓	↓	—	—	—	↓
																																											1		502800-T				6	KO-506	1	1½"			150#	–		CAST STL.-G
																																											2		SUPPLY				6	KO-507	2	1½"			3000#	–	B16.11	FORGED S
																																											2		↓				6	KO-508	2	1½"			↓	–	—	↓
																																											1		UAO				6	KO-509	1	1½"			—		—	STEEL
																																											1		↓				6	KO-510	1	1½"			—			↓

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 8X

BUILDERS PLAN NO. M4650-181-07-3

FRAME 6 OF 6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-183-11-4

Oct 1980 8X

FRAME 1 OF 2

LIST OF PIPES

EQ'D. TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
205'-0"	2½"	—	.095	60	150	—	TUBING, TY. "K", COPPER, DRWN. TEMPER, SML'S.	B-88		—	SERVICE	NOTE #128
100'-0"	2	—	.083			—				—		
460'-0"	1½"	—	.072			—				—		
290'-0"	1¼"	—	.065			—				—		
244'-0"	1"	—	.065			—				—		
340'-0	¾"	—	.065			—				—		
490'-0"	½"	—	.049			—				—		
140'-0	⅜"	—	.049			—				—		
40'-0	¼"	—	.035			—				—		
20'-0	2½"	40	.203			B36.10	CARB. STEEL, SEAMLESS, BLACK	A53,TY.S,GR.B		II		NOTES #128 & 135
60'-0	2"		.154									
15'-0	1½"		.145									
12'-0	¾		.113									
10'-0	5"		.258									
40'-0	4		.237									
40'-0	1"		.133									
10'-0	½"		.109									
10'-0	¼	80	.119									
12'-0	2"	40	.114									
5"	1½"	REG.	.150			—	RED BRASS, P.E.	B-43		—		FURNISH 12 FT. LGTHS.
2'-0"	1"	REG.	.126			—	P.E.			—		
20'-0"	6"	40	.280			B36.10	CARBON STEEL, SEAMLESS, BLACK	A-53,TYS,GRB		II		NOTES #128, #135
40'-0"	3"		.216									
24'-0"	½" O.D.	—	.049			—	TUBE, COPPER - DRAWN TEMPER	B-75, ALLOY 122		—		FURNISH 12 FT. LGTHS,
140'-0"	¼" O.D.	—	.049			—	TUBING TYPE "K" - SOFT DRAWN	B-88				NOTE #133
60'-0"	1½"	80	.200			B36.10	SEAMLESS CARBON ST'L BLK	A-53 TYS GRB	DRINKING FOUNTAIN & TEST SINK DRAIN TO BILGE	II	SERVICE	NOTES 128 & 135

LIST OF VALVES

DESIGN CRITERIA		PRESS STD	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM				END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO.
P.S.I.	°F					SEAT	DISC	STEM	PIN WHERE REQ'D.					
60	150	150#	—	CAST BRONZE	B62	BRONZE	BRONZE	BRONZE	—	FLANGED, F.F.D.	B16.24	GATE, SOLID WEDGE DISC.	Nos. 2,6,90-93	LUNKENHEIMER #1404
			—						—				2,6,90-93	
		200#	—		B61			—	MONEL	SOLD. JT., UNION	—	SWING CHECK	27,90-93	#2103
			—			MONEL	MONEL	MONEL	—		—	GATE, NRS. W/IND. (LOCKED CLOSED - SEE GEN. NOTE #1)	1,27,90-93	#2102
			—						—		—	GATE, NRS. W/IND.	1,27,90-93	
			—						—		—		1,27,90-93	
			—						—		—		1,27,90-93	
													~~1,27,90-93~~	
			—			BRONZE			—		—		1,27,90-93	
			—			MONEL			—		—	GLOBE	1,27,90-93	#2100
			—						—		—	GLOBE (LOCKED CLOSED - SEE GEN. NOTE #1)	1,27,90-93	
			—						—		—	GLOBE	1,27,90-93	
			—						—		—		1,27,90-93	
			—			BRONZE			—		—		1,27,90-93	
			—						—		—		1,27,90-93	
			—			MONEL			—		—	STOP-CHECK	1,27,90-93	#2100 MOD.
			—						—		—		1,27,90-93	
			—						—		—		1,27,90-93	
			—					—	—	SCRD.	—	RELIEF, SET AT 80 P.S.I.	ORD. ON REF. #2	—
		125#	—	CAST BRONZE	B62	BRONZE	BRONZE	BRONZE	—	SCRD.	B2.1	TEST COCK W/LEVER HANDLE	Nos. 90-93	LUNKENHEIMER #479
		200#	—		B61			—	MONEL	SOLD. JT., UNION	—	SWING CHECK	Nos. 27,90-93	#2103
								—					Nos. 27,90-93	#2103
								—	—	SCRD.	—	RELIEF, SET AT 80 P.S.I.	ORD. ON REF. #2	—
								—	—		—			—
		150#						—	—	FLGD.	—	3-WAY THERMOSTATIC	SEE NOTE NO. 96	
								—	—	SCRD.	—	RELIEF, SET AT 60 P.S.I.	ORD. ON REF. #2	—
		150#						—	—		B2.1	SOLENOID, 2 WAY		VENDOR FURN.
		200#	—	CAST BRONZE	B-61	BRONZE	BRONZE	—	MONEL	SOLD. JT. UNION	—	SWING CHECK	Nos. 27,90-93	LUNKENHEIMER #2103
			—					BRONZE	—	INLET - HOSE OUTLET - SCRD.	B2.4/-	GLOBE HOSE, FURNISH WITH FIG. #527 HOSE NIPPLE, W/ROCKER LUG TYPE CAP & CHAIN	1, ,38,90-93	POWELL FIG. #110H
			—						—	SCRD.	B2.1	GLOBE	1,90-93	#110
			—						—				1,90-93	
			—						—				1,90-93	
~~60~~	~~150~~			~~FORGED BRASS~~	~~B283~~	~~RESILIENT~~	~~STNS. ST'L~~	~~STNS. ST'L~~		~~SCRD.~~	~~B2.1~~	~~2-WAY SOLENOID VALVE - ENERGIZE TO OPEN~~	~~14,90-93~~	~~ASCO #8211B27~~
—	—	—	—	—	—	—	—	—	—	—	—	~~& ENERGIZE TO CLOSE, CONT. DUTY, 60# W.P.~~	—	—
		150#	B16.10	CAST STEEL	A216 GR.WCB	BRONZE	BRONZE	—	MONEL	FLGD F&D	B16.5	SWING CHK	NOS. 10, 90-93	LUNKENHEIMER #1572
				CAST BRASS	B62	BRASS	BRASS	—	—	SCRD.	—	VACUUM BREAKER — ANTI-SIPHON	NOS. 65, 90-93	WATTS No 288A
								—	—		—		NOS. 65, 90-93	
60	150	200#		CAST BRONZE	B-61	MONEL	MONEL	MONEL	—	SOLD. JT. UNION	—	GATE N.R.S W/IND.	NOS. 1,27,90-93	LUNKENHEIMER #2102

GENERAL NOTES

1- DESIGNATIONS "LOCKED CLOSED" OR "LOCKED OPEN" ARE LISTED FOR YARD/TECHNICAL INFORMATION ONLY - NOT FOR ORDERING PURPOSES. LOCKS AND LOCATIONS ARE PROVIDED ON REF. #3

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	1/14/77		REVISED QTY. OF PW-109 (5' TO 10') PW-111 (2'-0" TO 15') & PW-20 (22 TO 40)	D.L.B.	G.G.S. LTR. DATED 1-27-76
2	5-17-77		1. ADDED PW-121, PW-122 & PW-123 2. REVISED QTY. 115 FROM 30' TO 40'.	D.L.B.	G.G.S. LTR. DATED 5-18-77
3	7/29/77		1. REVISED QTY. OF PW-109 (10' TO 20') PW-110 (40' TO 60') PW-113 (5' TO 10') & PW-15 (6 TO 7) 2. REVISED SIZE OF PW-19 FROM ½"×1" TO 1¼"×1". 3. RELEASE RES. OF PW-27. 4. DELETED PW-33.	D.L.B.	G.G.S. LTR. DATED 9-29-77
4	11-8-77		1- INCR. QTY OF PW106 (240-310) & PW7 (2-3) 2- DECR QTY OF PW-8 (2-1) 3- ADDED NOS. PW-124, PW-125 & PW-34	PCG	11/9/77
5	1-27-78		1. REVISED THE QTY FOR: PW-100 (120'-205'), PW-101 (90'-100'), PW-103 (120'-290'), PW-104 (220'-244'), PW-106 (310'-490'), AND PW-13 (7-12). 2. DELETED PW-8. 3. REVISED PW-19. END TYPE. 4. REVISED PW-29. SIZE (1¼" TO 2"), END TYPE, AND MANUFACTURERS FIGURE NUMBER.	RMM	1-30-78
6	7-21-78		1. ADDED PW-22, PW-35 & PW-36. 2. INCREASED QTY. OF PW-17 (1-2), PW-18 (2-3) & PW-21 (1-2)	G.G.K.	7-28-78
7	6-4-79		1. ADDED PW-37	EJK	6-8-79

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINER SHIP	8450

JOB NO. 183

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 8-30-76
DRAWN T.G.N.
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-183-11-4
ALT. NO. 7

PIPE & VALVE LIST FOR POTABLE WATER IN MACHINERY SPACE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	11-23-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.	12-3-76				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
3	M 4650-372-2	ENGINEERS LOCK LIST
2	M-4650-111-13	SCHED. OF SAFETY & RELIEF VALVES
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

M-627

DATE OF ISSUE

	4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
ALTERATION	0	1	2	3	4	5	6	7
ENGINEERING DISTRIBUTION	11-1-76	[illegible]	5-20-77	8-3-77	11-28-77	2-3-78	8-2-78	6-15-79
MAIL: OWNERS	5	5	4	4	3	3	3	3
AMERICAN BUREAU	3	3		3				3
LLOYD'S R.S.								
U.S.M.A.								
U.S. NAVY								
U.S.C.G.								
JOINER CONT'R.								
U.S.P.H.	3	3		3			3	3
INSPECTION: OWNER'S INSP.			1	1	1	1	1	1
AM. BU. INSP.								
LLOYD'S INSP.								
U.S.M.A. INSP.			1	1	1	1	1	1
U.S. NAVY INSP.								
U.S.C.G. INSP.								
OFFICE: HULL DRAFT.-21	1		1	1	1	1	1	1
MACH. DRAFT.-22	2		2	2	2	2	2	2
ELEC. DRAFT.-23	1		1	1	1	1	1	1
OUTFIT DRAFT.-25								
ESTIMATING								
J. DOUGHERTY (CTD)	1		1	1	1	1	1	1
MISC.: PRODUCTION (SCD)								
ORDER DEPT.								
JOINER CONT. YARD								
LONG-PLANNING	2							
TOTAL ENG'R. DIST.	18	11	11	17	10	10	13	16
YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11/[illegible]		
YARD: ARO-OFFICE	1	1	1	1	1	1		
J. SIMMONS	1	1	1	1	1	1		
PIECE RATE-11	1	1	1	1	1	1		
TEST DEPARTMENT						1		
QUALITY ASSURANCE	1	1	1	1	1			
PLANNING	1	1	1	1	1	1		
STRUCTURAL: GROUND ASSEMBLY	2	2	2	2	2	2		
35 DEPT.	2	2	2	2	2	2		
P. McNAIR	1	1	1	1	1			
H. LEVY	1	1	1	1	1			
NO. WAY								
NO. WAY								
NO. WAY								
NO. WAY								
STRUCT. SUPER.	2	2	2	2	2	2		
OPTICAL DETAIL-46	2	2	2	2	2	2		
WET DOCK								
MACH'Y & OUTFIT.: PIPE SHOP-52	4	4	4	4	4	4		
OUTFIT. #1 PIER	1	1	1	1	1	1		
PIPE DRAFT.-52	2	2	2	2	2	2		
BOILER SHOP-56	1	1	1	1	1	1		
OUTSIDE MACH.-60	2	2	2	2	4	4		
G-MAT'L	1	1	1	1	1	1		
ELECTRIC SHOP-70								
SHEET MET. SHOP-74								
COPPER SHOP-51								
PAINT SHOP-78	1	1	1	1	1	1		
OTHER: WELDING								
BROKUS						1		
MOLD LOFT-41	1	1	1	1	1	1		
BRACKET SHOP								
B. Miller						1		
Alec Miller						1		
TOTAL YARD DIST.	28	28	28	25	30	31		

4650-51-ALT 2
4650-51-ALT 3
4650-51-ALT 4
4650-51-ALT 5
4650-51-ALT 6

13.5 SQ.FT.

PIPING PACKAGE UNIT APPLICATION																			
UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION																									PIPE IDENT.
UNIT #1	UNIT #	UNIT #3	UNIT #4	UNIT #	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #	UNIT #	UNIT #13	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	181-6	
25'		90'-0"						50'				40'													PW-100
		20'-0"						20'				60'													PW-101
60'		80'-0"				85'	85'	40'				40'													PW-102
		20'-0"	20'				40'	90'				120'													PW-103
6'		10'-0"	25'		80'		24'	35'	60'			4'													PW-104
		10'-0"										4'													PW-105
100'		50'-0"			80'		80'		60'			120'													PW-106
20'					25'		80'					6'													PW-107
		20'-0"					10'																		PW-108
			8'																					10'0"	PW-109
			18'																					40'-0"	PW-110
																								15'-0	PW-111
			2'																						PW-112
			10'																						PW-113
			1'																						PW-114
			36'-0"																						PW-115
			16'																						PW-121
			35'																						PW-122
			18'																						PW-123
						70'	60'																		PW-124
							60'																		PW-125

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D.			SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA	
						BLK.	GALV.	TOTAL				P.S.I.	°F
503045-A	503045-J			5	PW-100	—	—	205'-0"	2½"	—	.095	60	150
				5	PW-101	—	—	100'-0"	2	—	.083		
					PW-102	—	—	460'-0"	1½"	—	.072		
	503045-J			5	PW-103	—	—	290'-0"	1¼"	—	.065		
				5	PW-104	—	—	244'-0"	1"	—	.065		
					PW-105	—	—	340'-0"	¾"	—	.065		
	503045-H	503045-J		4,5	PW-106	—	—	490'-0"	½"	—	.049		
					PW-107	—	—	140'-0"	⅜"	—	.049		
					PW-108	—	—	40'-0"	¼"	—	.035		
503044	503044-A	503044-C		1,3	PW-109			20'-0"	2½"	40	.203		
	503044-C			3	PW-110			60'-0"	2"		.154		
	503044-A			1	PW-111			15'-0"	1½"		.145		
					PW-112			12'-0"	¾"		.113		
	503044-C			3	PW-113			10'-0"	5"		.258		
					PW-114			40'-0"	4"		.237		
	5173011-B			2	PW-115			40'-0"	1"		.133		
					PW-116			10'-0"	½"		.109		
					PW-117			10'-0	¼"	80	.119		
					PW-118	—	12'-0"	12'-0"	2"	40	.114		
PIPE SHOP					PW-119	—	—	5"	1½"	REG.	.150		
					PW-120	—	—	2'-0"	1"	REG.	.126		
503044-B				2	PW-121	20'-0"	—	20'-0"	6"	40	.280		
503044-B				2	PW-122	40'-0"	—	40'-0"	3"		.216		
503045-E				2	PW-123	—	—	24'-0"	½" O.D.	—	.049		
503045-H				4	PW-124	140'-0"		140'-0"	¼" O.D.	—	.049		
503044-D				4	PW-125	60'-0"		60'-0"	1½"	80	.200		

PIPING PACKAGE UNIT APPLICATION																			
UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION																									VALVE IDENT.
UNIT #1	UNIT #	UNIT #3	UNIT #4	UNIT #	UNIT #	UNIT #7	UNIT #8	UNIT #9	UNIT #	UNIT #	UNIT #	UNIT #13	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	181-6	
		2						1																	PW-1
1																									PW-2
1																									PW-3
			1																						PW-4
1		4					2	4																	PW-5
			1					1																	PW-6
1								1																	PW-7
								1																	PW-9
								1																	PW-10
							1																		PW-11
								3																	PW-12
2		3					1					6													PW-13
1							1	1																	PW-14
		7																							PW-15
		2						1																	PW-16
1								1																	PW-17
		1						2																	PW-18
		1																							PW-19
																								40	PW-20
1								1																	PW-21
		1																							PW-22
								1																	PW-23
								1																	PW-24
			1																						PW-25
								1																	PW-26
		2																							PW-27
		1																							PW-28
						1	1																		PW-29
				2																					PW-30
				1																					PW-31
				1																					PW-34
1																									PW-35
		1																							PW-36
							1																		PW-37

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		PRESS STD	ANSI DIM. STD.	BODY MATERIAL
								P.S.I.	°F			
503000-A					PW-1	3	2½"	60	150	150#	—	CAST BRONZE
					PW-2	1	2"				—	
					PW-3	1	2"			200#	—	
					PW-4	2	1½"				—	
					PW-5	15	1½"				—	
					PW-6	3	1¼"				—	
	503000-H			4	PW-7	3	1"				—	
				4,5	PW-8	~~1~~	~~¾"~~					
					PW-9	1	⅜"				—	
					PW-10	1	1½"				—	
					PW-11	1	1"				—	
					PW-12	3	¾"				—	
	503000-J			5	PW-13	12	½"				—	
					PW-14	3	⅜"				—	
	503000-E				PW-15	7	¼"				—	
					PW-16	3	1½"				—	
	503000-R			6	PW-17	2	1"				—	
				6	PW-18	3	¾"				—	
—	—			1,5	PW-19	1	1¼" x 1"					
503000-A	503000-C			1	PW-20	40	¼"			125#	—	CAST BRONZE
	503000-R			6	PW-21	2	1"			200#	—	
503000-R				6	PW-22	1	¾"					
—	—				PW-23	1	¾" x ¾"					
—	—				PW-24	1	¾" x 1"					
600053-A	—				PW-25	1	3"			150#		
—	—				PW-26	1	¾" x 1"					
500093				~~RES.~~	PW-27	2	1½"			150#		
503000-A					PW-28	1	¼"			200#	—	CAST BRONZE
	503000-J			5	PW-29	2	2"				—	
					PW-30	2	1½"				—	
					PW-31	1	¾"				—	
					PW-32	1	¼"				—	
				3	PW-33	~~2~~	~~1"~~	~~60~~	~~150~~	~~—~~	~~—~~	~~FORGED BRASS~~
					—	—	—	—	—	—	—	—
503000-H				4	PW-34	1	2"			150#	B16.10	CAST STEEL
503000-R				6	PW-35	1	1"					CAST BRASS
				6	PW-36	1	¾"					
503000-W				7	PW-37	1	½"	60	150	200#		CAST BRONZE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 8X

BUILDERS PLAN NO. M4650-183-11-4

FRAME 2 OF 2

LIST OF FLANGES

INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
W/TANKS	150#	B16.24	CAST BRONZE	B-62	SOLD. JT.-F&D. FOR TY. "K" COPPER TUBE			NOS. 90-93	FLAGG FIG. 3110
SERVICE	150#	B16.5	FGD. CARBON STL	A105	SOCK.WELD, FLAT FACE F&D., BORE FOR SCH40 PIPE				TUBE TURN PT NO. 150
					SLIP-ON,				50
					F&D.				
SERVICE	150#	B16.5	FGD. CARBON STL	A105	SLIP-ON, FLAT-FACE, F&D.			NOS. 90-93	TUBE TURN PT NO. 50
	150#				F&D.				
					SOCK.WELD, FLAT FACE, F&D. BORE FOR SCH. 40 PIPE				TUBE TURN PT. NO. 150
					SLIP-ON, F&D				50
SERVICE	150#	B16.5	FGD. CARBON STL	A105	SOCK.WELD. FLAT-FACE, F&D-BORE FOR SCH 40 PIPE			NOS. 90-93	TUBE TURN PT NO. 150
W/TANKS		B16.24	CAST BRONZE	B-62	SOLD. JT., F&D. FOR TY. "K" COPPER TUBE				FLAGG FIG. 3110
SERVICE		B16.5	GALV. FGD. ST'L.	A105	SOCK.WELD, FLAT FACE F&D-BORE FOR SCH.40 PIPE				TUBE TURN PT NO. 150

LIST OF GASKETS

INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
SERVICE	150#	B16.21	RUBBER-CLOTH INSERT	D2000-GR.AA 805	FULL FACE TYPE, 1/8" THK.	USE W/ FL-200 & FL-203			JOHNS-MANVILLE STYLE #109
						FL-201 & FL-204			
						USE W/ FL-205			
					RING TYPE	USE W/ FL-206			
			RUBBER-CLOTH INSERT	D2000-GR.AA 805	FULL FACE TYPE, 1/8" THK.	USE W/ FL-207			JOHNS-MANVILLE STYLE #109
						FL-208			
					RING TYPE	FL-209			
					FULL FACE TYPE	FL-202 & FL-212			
						FL-210, FL-213, FL-214			
					RING TYPE	USE W/ FL-211			

LIST OF STUDS, BOLTS & NUTS

S		NUTS			DESIGN CRITERIA		BOLTS				NUTS			SERVICE	CODE NO.	REMARKS
GTH.	ANSI DIM. STD.	MATERIAL ASTM	DIA.	ANSI DIM. STD.	PSI	°F	MATERIAL ASTM	DIA.	LGTH.	ANSI DIM. STD.	MATERIAL ASTM	DIA.	ANSI DIM. STD.			
—	—	—	—	—	60	170	A307 GR. B	3/4"	3 1/4"	B18.2.1, B1.1	A307 GR. B	3/4"	B18.2.2	USE W/ FL-207, FL-211		
—	—	—	—	—			HVY. HEX. HD.	5/8"	3"	UNC-2A	HVY. HEX.	5/8"	B1.1 UNC-2B	FL-203, FL-208, FL-209, FL-205, FL-206		
—	—	—	—	—				5/8"	2 3/4"		CARB. STEEL	5/8"		FL-210, FL-214		
—	—	—	—	—			CARBON	1/2"	2 1/4"		SEMI-FINISHED	1/2"		FL-204 & FL-201		
—	—	—	—	—			STEEL	1/2"	2"			1/2"		FL-212		
—	—	—	—	—				5/8"	2 1/4"			5/8"		FL-200, FL-213		
—	—	—	—	—				1/2"	1 3/4"			1/2"		FL-201		
—	—	—	—	—				1/2"	1 1/2"			1/2"		FL-202		
								3/4"	3 1/2"			3/4"		PW-738 & FL-211		

REFERENCE · PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	3/17/77		1-ADDED FL-205, FL-206, FL-211, G-303, G-304, G-310 2-REVISED QTY FL-212 (2 TO 8) & G-308 (2 TO 4)	D.L.B.	G.G.S. LTR DATED 7-18-77
2	11-8-77		1-INCR. QTY OF FL200 (8-10) FL213 (1-5), G300 (8-9) G308 (4-6) G309 (3-6), G310 (2-3), B404 (8-16), B405 (36-48) 2-ADDED NO B-408	FCG	11/28/77
3	6/29/78		1-DELETED G-302 (WAS RES.) 2-INCR. QTY OF FL-200 (10-14) & B406 (24-28)	FCG	7/5/78

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 183

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE OCT. 19, 1976
DRAWN R.G.
APPROVED
TRACED
APPROVED
CHECKED G. McG.
APPROVED HGR

PLAN NO. M-4650-183-11-5
ALT. NO. 3

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR POTABLE WATER IN MACH'Y SPACE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	9-16-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.	12-3-76				

4650-51
4650-51 REPL.
4650-51 REPL.
4650-51 REPL.

		DATE OF ISSUE			
	ALTERATION	0	0	1	2
	ENGINEERING DISTRIBUTION	11-1-76	4-13-77	5-23-77	11-28-77
MAIL	OWNERS	5	5	4	3
	AMERICAN BUREAU	3	3		
	LLOYD'S R.S.				
	U.S.M.A.				
	U S NAVY				
	U.S.C.G.				
	JOINER CONT'R.				
	USPH	3			
INSPECTION	OWNER'S INSP.			1	1
	AM. BU. INSP.				
	LLOYD'S INSP.				
	U.S.M.A. INSP.			1	1
	U.S. NAVY INSP.				
	U.S.C.G. INSP.				
OFFICE	HULL DRAFT.-21	1		1	1
	MACH. DRAFT.-22	2		2	2
	ELEC. DRAFT.-23	1		1	1
	OUTFIT. DRAFT.-25				
	ESTIMATING				
	J DOUGHERTY (CTD)	1		1	1
MISC.	PRODUCTION (BCD)				
	ORDER DEPT.				
	JOINER CONT. YARD				
	LONG-PLANNING	2			
	TOTAL ENG'R. DIST.	18	8	11	10
	YARD DISTRIBUTION	6/26/77	12/14/77	7/19/78	
YARD	[illegible] OFFICE	1	1	1	
	SHIP SUPT.	1	1	1	
	PIECE RATE - 11	1	1	1	
	TEST DEPARTMENT				
	QUALITY ASSURANCE	1	1	1	
	[illegible] PLANNING	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	
	35 DEPT	2	2	2	
	P. McNAIR	1	1	1	
	H. LEVY	1	1	1	
	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.	2	2	2	
	OPTICAL DETAIL-46	2	2	2	
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP - 52	2	2	2	
	OUTFIT. #1 PIER	1	1	1	
	PIPE DRAFT. - 82	2	2	2	
	BOILER SHOP - 58	1	1	1	
	OUTSIDE MACH. - 60	2	2	4	
	Q-MATIC	1	1	1	
	ELECTRIC SHOP - 70				
	SHEET MET. SHOP - 74				
	COPPER SHOP - 81				
	PAINT SHOP - 78	1	1	1	
OTHER	WELDING				
	MOLD LOFT - 41	1	1	1	
	BRACKET SHOP				
	TOTAL YARD DIST.	26	26	26	

4650-51-ALT. 1
4650-51-ALT. 2
4650-51-ALT. 3

SQ.FT.

M-628

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-183-11-5
Oct 1980 8X
FRAME 1 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-183-11-5

Oct 1980 8X

FRAME 2 OF 2

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

FLANGE IDENT. NO.	UNIT	UNIT	UNIT 3	UNIT 4	UNIT	UNIT	UNIT 7	UNIT 8	UNIT 9	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181-6
FL200			11						3																
FL201			4	1				1	2																
FL202			2																						
FL203																									2
FL204								1																	4
FL205				9																					
FL206				1																					
FL207																									
FL208																									
FL209				2																					
FL210				2																					
FL211				2																					
FL212				8																					
FL213	3								2																
FL214																									

REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.
503001	503001-C	503001-D	2,3	FL200	14	2 1/2"	60	150	W/TANKS	150#	B16.24	CAST BRONZE	B-62
↓				FL201	9	1 1/2"	↓	↓		↓	↓	↓	↓
↓				FL202	2	1"	↓	↓		↓	↓	↓	↓
↓				FL203	2	2 1/2"	30	170	SERVICE	150#	B16.5	FGD. CARBON STL	A105
↓				FL204	5	1 1/2"	↓	↓	↓	↓	↓	↓	↓
503001-A			1	FL205	9	3"	↓	↓	↓	↓	↓	↓	↓
↓			1	FL206	1	3"	↓	↓	↓	↓	↓	↓	↓
503001				FL207	8	5"	30	170	SERVICE	150#	B16.5	FGD. CARBON STL	A105
↓				FL208	6	4"	↓	↓	↓	↓	↓	↓	↓
↓				FL209	2	4"	↓	↓	↓	150#	↓	↓	↓
↓				FL210	4	2"	↓	↓	↓	#	↓	↓	↓
503001-A			1	FL211	2	6"	↓	↓	↓	↓	↓	↓	↓
503001			1	FL212	8	1"	30	170	SERVICE	150#	B16.5	FGD. CARBON STL	A105
↓	503001-C		2	FL213	5	2"	60	150	W/TANKS	↓	B16.24	CAST BRONZE	B-62
↓				FL214	1	2"	30	175	SERVICE	↓	B16.5	GALV. FGD. ST'L.	A105

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

GASKET IDENT NO.	UNIT 1	UNIT	UNIT 3	UNIT 4	UNIT	UNIT	UNIT 7	UNIT 8	UNIT 9	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181-6
G300	3		4						2																
G301			4	1			1	1	2																
G302																									
G303				6																					
G304				1																					
G305																									
G306																									
G307				2																					
G308			2	4																					
G309		2		2					2																
G310				3																					

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.
503024	503024-B		2	G300	9	2 1/2"	60	170	SERVICE	150#	B16.21	RUBBER-CLOTH INSERT	D2000-GRAA
↓				G301	13	1 1/2"	↓	↓	↓	↓	↓	↓	↓
			~~RES~~ 3	~~G302~~	~~2~~	~~2 1/2"~~	↓	↓	↓	↓	↓	↓	↓
503024-A			1	G303	6	3"	↓	↓	↓	↓	↓	↓	↓
503024-A			1	G304	1	3"	↓	↓	↓	↓	↓	↓	↓
503024				G305	4	5"	↓	↓	↓	↓	↓	RUBBER-CLOTH INSERT	D2000-GRAA
↓				G306	9	4"	↓	↓	↓	↓	↓	↓	↓
↓				G307	2	4"	↓	↓	↓	↓	↓	↓	↓
↓	503024-A	503024-B	1,2	G308	6	1"	↓	↓	↓	↓	↓	↓	↓
↓	503024-B		2	G309	6	2"	↓	↓	↓	↓	↓	↓	↓
503024-A	↓		1,2	G310	3	6"	↓	↓	↓	↓	↓	↓	↓

LIST OF

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

BOLTING IDENT. NO.	UNIT	UNIT	UNIT 3	UNIT 4	UNIT	UNIT	UNIT 7	UNIT 8	UNIT 9	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181-6
B400				8																					
B401				44																					
B402				8																					
B403				4				4																	
B404				16																					
B405	12		16						20																
B406			16				4		8																
B407			8																						
B408				8																					

REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	PS
BOLTS (SUPPLY) NUTS (503030A)				B400	40	—	—	—	—	—	—	—	60
BOLTS (503030) NUTS (503030A)				B401	52	—	—	—	—	—	—	—	↓
↓				B402	20	—	—	—	—	—	—	—	↓
↓				B403	20	—	—	—	—	—	—	—	↓
BOLTS (SUPPLY) NUTS (503030A)	SUPPLY		2	B404	16	—	—	—	—	—	—	—	↓
BOLTS (SUPPLY) NUTS (503030A)	↓		2	B405	48	—	—	—	—	—	—	—	↓
BOLTS (503030) NUTS (503030A)	↓		3	B406	28	—	—	—	—	—	—	—	↓
BOLTS (SUPPLY) NUTS (503030A)				B407	8	—	—	—	—	—	—	—	↓
SUPPLY			2	B408	8								

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980 8X

BUILDERS PLAN NO. M4650-183-11-6

FRAME 1 OF 5

LIST OF FITTINGS

DESIGN CRITERIA P.S.I.	°F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
60	150	—		—	CARBON STEEL BLK	A-53 TY "E" GR B	BHD SLEEVE			REF 2, FIG. 3A
		—		—		AISI-C1015				
		—		—		A53 TY E GR B				FIG. 2
		—	—	B16.18	CAST BRONZE	B-62	BUSHING, FLUSH SOL'D. JT - FTG x C		NOS. 90-93	FLAGG FIG. 3080
		—	—				TEE, C x C x C			3030
		—	—				BUSHING, FLUSH FTG x C			3080
		—	—				REDUCING TEE, C x C x C			3030
60	150	—	—	B16.18	CAST BRONZE	B-62	REDUCING TEE SOL'D. JT - C x C x C		NOS. 90-93	FLAGG FIG. 3030
		—	—				TEE,			3096
		—	—				UNION C x MPT			3030
		—	—				TEE, C x C x C			
		—	—	B16.18						
		—	—				90° ELBOW, C x C			3001
		—		—	CARBON STL. BLK	A-53 TY "E" GR B	BHD SLEEVE			REF 2, FIG. 3A
		—	—	B16.18	CAST BRONZE	B-62	90° ELBOW, SOL'D. JT - C x C		NOS. 90-93	FLAGG FIG. 3001
		—	—				90° RED. ELBOW,			3004
		—	—				90° FTG. ELBOW FTG x C			3003
		—	—				90° ELBOW C x MPT			3095
		—	—				UNION C x FPT			3096
		—	—				C x MPT			3015
		—	—	B16.18			45° FTG. ELBOW FTG x C			3001
		—	—				90° RED ELBOW C x C			3096
		—	—				UNION C x MPT			
		—	—				C x MPT			3094
		—	—				C x C			
		—	—	—	BRASS	B-43	NIPPLE PLAIN ONE END THD			
		3000#	—	B16.11	CARBON STL.	A-234	PIPE CAP, SCRD.		NOS 90-93	BONNEY FORGE
		~~150#~~	—	—	CAST BRONZE	B-62	CAP, THD W/CHAIN, ROCKER LUG TYPE		NOS. 90-93	~~AKRON STYLE 345~~
		—	—	B16.18			RED COUPLING, SOL'D. JT - C x C		NOS.	FLAGG FIG. 3085
		150#	—	—	~~BRONZE~~	~~B-283~~	~~BRAZOLET-THD~~			~~BONNEY FORGE~~
30	170	3000#	—	B16.11	FGD. STEEL	A-105	THREADOLET - I.P.S. RUN & OUTLET		170, 90-93	
60	150	—	—	B16.18	CAST BRONZE	B-62	"Y" BRANCH, 45° SOL'D. JT - C x C x C		90-93	FLAGG FIG. 3065
		—	—				ADAPTER, C x MPT			3076
		—	—				90° RED ELBOW C x C			3001
		—	—				BUSHING, FLUSH FTG x C			3080
		—	—	—	CARBON STL. BLK	A-53 TY "E" GR B	BHD SLEEVE			REF 2, FIG. 3A
30	170	40	—	B16.9	SMLS. STL	A-234 GR WPB	180° RETURN BEND, B.W. - L.R.		NOS. 90-93	~~TUBE TURN PT NO 7~~
			—				REDUCER - CONC.			NO. 90
			—				45° ELBOW - L.R.			NO. 5
60	150		—	B16.18	CAST BRONZE	B-62	45° FTG. ELBOW - FTG x C - SOL'D. JT			FLAGG FIG. 3015
			—				RED. TEE C x C x C			3030
			—				C x C x C		157, 90-93	
			—				ADAPTER C x MPT		90-93	3076
		—	—	—	BRASS	B-43	NIPPLE PLAIN THD BOTH END			
		—	—	—	CARBON STL BLK	A-53 TY "E" GR B	BHD. SLEEVE			REF 2, FIG. 3A
—	—	—	—	B16.14	M.I.	A197	BUSHING-SCRD		NOS. 90-93	FLAGG FIG. 2071
60	150	—	—	B16.18	CAST BRONZE	B-62	RED. TEE, SOL'D. JT - C x C x C		NOS. 90-93	FLAGG FIG. 3030
		—	—	—	CARBON STL BLK	AISI-C1015	BHD SLEEVE			REF 2, FIG. 3
		—	—	B16.18	CAST BRONZE	B-62	ADAPTER, C x MPT SOL'D. JT		NOS. 90-93	FLAGG FIG. 3076
		—	—	B16.18	CAST BRONZE	B-62	COUPLING, C x C			FLAGG FIG. 3085
		—	—				RED. TEE C x C x C			3030
		—	—	—	CARBON STL. BLK	A-53 TY "E" GR B	BHD SLEEVE			REF 2, FIG. 2
		—	—	—	BRONZE	B-283	BRAZOLET,		NOS. ~~90-93~~	~~BONNEY FORGE~~
60	150	150#	—	B16.18	CAST BRONZE	B-62	RED. COUPLING, SOL'D. JT C x C			FLAGG FIG. 3085
		—	—				90° RED. ELBOW, C x C			3001
		—	—				"Y" BRANCH-45° C x C x C		157, 90-93	3065
		—	—				ADAPTER, FTG x FPT		90-93	3077
		—	—	—	CARBON STL BLK	AISI-C1015	BHD SLEEVE			REF 2, FIG. 3
		—	—	B16.18	CAST BRONZE	B-62	BUSHING, FLUSH - SOLD. JT FTG x C		NOS. 90-93	FLAGG FIG. 3080
30	170°	—	—	—	BRASS	B-16	MALE CONNECTOR - M.P.T. x O.D.T.			SWAGELOK B810-1-8
		—	—	—		B-16	UNION - O.D.T.			B-810-6
~~60~~	~~150~~	~~150#~~	—	—	~~BRONZE~~	~~B-283~~	~~BRAZOLET~~		~~NOS.~~	~~BONNEY FORGE~~
30°	170	3000#	-	B16.11	FGD. STL	A-105	BUSHING SCRD		90-93	
		150#	-	-	STEEL	A-576	PIPE COUPLING, 5/16"x7" MIDDLE RING W/ 2-16½" LG. ANCHOR BOLTS			DRESSER STYLE 38
			-	-			½"x5" W/ 2-14½"			
			-	-			.203x5"			
60	150	150#	—	—	BRONZE	B-283	BRAZOLET SILBRAZE OUTLET x I.P.S. RUN		NOS. 90-93	BONNEY FORGE
60	150	—	—	B16.18	CAST BRONZE	B-62	RED. TEE, SOL'D. JT - C x C x C		NOS. 90-93	FLAGG FIG. 3030
		—	—				45° ELBOW, C x C			3012
		—	—				RED. COUPLING C x C			3085

UAO-50241

NO.	PLAN NO.	TITLE
4	M-4650-181-6	LOC. & DETS OF PIPING IN D.B., D.W. & P.W. TANKS
3	EF-427	FUNNELS FOR POTABLE WATER SYSTEM
2	EF-496	PIPING SLEEVES & CONNECTIONS TO STRUCTURE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE, PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	1/14/76		1-ADDED REF. 1, PW-723 AND PW-724 2-RELEASED RES. ON PW-554. 3-REVISED QTY PW-558 (22 TO 40), (PW-709 (2 TO 4) 4. PW-564 DELETED	D.L.B.	G.G.S. LTR. DATED 5-18-77
2	5/18/77		1. ADDED PW-596, PW-597, PW-599 TO PW-603, PW-640, PW-641, PW-652 TO PW-657, PW-666, PW-673, PW-675, PW-677 TO PW-679, PW-686 AND PW-717.	D.L.B.	G.G.S. LTR. DATED 7-18-77
3	9/22 77		1-ADDED OPTICAL DET MK.	PCG	
4	11-8 77		1-INCR. THE QTY OF: PW505 (2-4), PW510 (2-3), PW514 (4-5), PW535 (3-18), PW538 (3-14), PW570 (1-4) PW581 (5-10), PW597 (1-3) PW613 (4-11), PW614 (2-8) PW616 (8-17) PW651 (4-5) PW664 (2-4) PW666 (1-2) & PW723 (4-8) 2-REVISED THE DESCRIPTION OF PW-570 & PW-622. 3-CHANGED THE SIZE OF PW707 (¾" TO 1") 4-REMOVED RES. FROM: PW-570, PW614, PW-622, PW-707. 5-ADDED NOS. PW-725 THRU PW-750; DELETE PW-585 (WAS RES.)	PCG	
5	1-27-78		1. REVISED THE QTY. FOR: PW512 (1-7), PW514 (5-7), PW515 (1-3), PW537 (36-60), PW538 (14-23), PW539 (11-16), PW581 (10-12), PW584 (9-12), PW613 (11-17), PW616 (17-32), PW662 (1-2), PW664 (4-10), PW665 (1-14), PW668 (2-3), PW731 (1-10). 2. ADDED PW574, & PW751 THRU PW763 INCL. 3. REVISED PW679. CHG'D SIZE (FROM 36-3/8" x ¼" TO 36-3/8" x ½"). 4. DELETED PW550, PW551, PW553, PW557, PW571, PW572, PW589, PW598, PW617, PW623, PW628, PW629, PW672, PW674, PW683, PW684, PW687, PW692, PW693, PW698, PW699, PW700, PW701, PW702, PW703, PW704, PW716, PW718.	RHM	2-1-78
6	3-15-78		1. INCREASED THE QTY FOR: PW-515 (3-4), PW-534 (1-3), PW-535 (18-20), PW-539 (16-20), PW-668 (3-4), PW-757 (2-3). 2. ADDED PW-764 & PW-765. 3. REVISED THE ASTM SPEC, DESCRIPTION, & MFG. FIG NO, FOR PW-740.	RHM	3 20 78
7	6/29/78		1- ADDED PW766 THRU PW772. 2- INCR THE QTY OF PW 580 (1-2), PW 607 (1-2) PW 668 (4-5) & PW 730 (1-2) 3- REVISED THE DESCRIP. & REMOVE THE RES. OF ITEM NOS. PW-604 & PW-726.	PCG	7 5 78
8	9-29-78 6-4-79		1-QUANT. OF ITEM PW-751 INCR. FROM 2 TO 3. AND ITEMS PW-773, PW-774, AND PW-775 ADDED PER Y.I.S. M-4650-22-283 2-PW-738 CHANGED SIZE OF ORIF. HOLE FROM 6.065" TO 3.0625" DIA.-PER YIS 4650-22-495.	P.G. G.G.K.	6 8 79

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO. 183

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE OCT. 19 1976
DRAWN R.C.
APPROVED
TRACED
APPROVED
CHECKED G. McC
APPROVED

PLAN NO. M-4650-183-11-6
ALT. NO. 8

FITTING LIST FOR POTABLE WATER IN MACH'Y SPACE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	9-16-78				
U.S.C.G.	✗				
LLOYD'S R.S.	✗				
U.S.P.H.S.	12-3-76				

	4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
ALTERATION	0	1	2	3	4	5	6	7	8
ENGINEERING DISTRIBUTION	11-1-76	7-18-77	8-20-77	10-3-77	12-15-77	2-3-78	3-27-78	7-10-78	6-13-79
OWNERS	5	5	4		3	3	3	3	3
AMERICAN BUREAU	3	3							3
LLOYD'S R.S.									
U.S.M.A.									
U.S. NAVY									
U.S.C.G.									
JOINER CONT'R.									
USPH	3	3							3
OWNER'S INSP.			1	1	1	1	1	1	1
AM. BU. INSP.									
LLOYD'S INSP.									
U.S.M.A. INSP.									
U.S. NAVY INSP.									
U.S.C.G. INSP.									
HULL DRAFT.-21	1	1	1	1	1	1	1	1	1
MACH. DRAFT.-22	2	1	2	2	2	2	2	2	2
ELEC. DRAFT.-23	1		1	1	1	1	1	1	1
OUTFIT DRAFT.-25									
ESTIMATING									
J. DOUGHERTY (CTD)	1		1	1	1	1	1	1	1
PRODUCTION (SCD)									
ORDER DEPT.									
JOINER CONT. YARD	2								
LONG-PLANNING	2								
TOTAL ENG'R. DIST.	[illegible]	11	11	7	[illegible]	10	10	10	16

POTABLE WATER IN MACH'Y SPACE

M-629

1

80 FT.

LIST OF

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 3	UNIT 4	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT 13	181-6	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	AST SPE
										UAO					PW500	13	1½"	60	150	—		—	CARBON STEEL BLK	A-53 TY
				1	1										PW501	3	1"			—		—		AISI-C
															PW502	16	½"			—		—		A53 TY
															PW503	5	3/8"			—		—		
									2						PW504	2	2½"			—		—		
									4					4	PW505	4	1½"			—		—		
										503003-B					PW506	1	2½"x2"			—	—	B16.18	CAST BRONZE	B-62
															PW507	4	2½"x1½"			—	—			
															PW508	1	2"x¾"			—	—			
	1														PW509	5	1½"x1"			—	—			
						1					503003-J			4	PW510	3	1½"x¾"			—	—			
	1					2									PW511	4	1"x¾"			—	—			
											503003-K			5	PW512	7	½"			—	—			
			1					1							PW513	2	½"x3/8"			—	—			
			1								503003-J	503003-K		45	PW514	7	2½"x1½"x1½"			—	—			
	2					3		2			503003-K	503003-P		56	PW515	4	2½"x2½"x1"			—	—			
						3		1							PW516	2	2½"x2½"x2½"			—	—			
															PW517	1	2½"x1½"x2½"			—	—			
	1														PW518	4	2"x1½"x2"			—	—			
	1														PW519	2	1½"x1¼"x1½"			—	—			
	1	1													PW520									
										503003-B					PW521	1	1½"x1½"x3/8"	60	150	—	—	B16.18	CAST BRONZE	B-62
1															PW522	1	¾"x1"x1¼"			—	—			
															PW523	1	1½"x¾"x1"			—	—			
															PW524	2	1½"x1½"x¾"			—	—			
	1							1							PW525	1	1½"x¾"x¾"			—	—			
															PW526	1	1¼"x1"x1½"			—	—			
															PW527	1	¾"x¾"x½"			—	—			
						1									PW528	2	½"x3/8"x½"			—	—			
															PW529	1	½"x3/8"x3/8"			—	—			
											503003-S			7	PW530	2	2½"			—	—			
	2														PW531	2	¾"			—	—			
															PW532	11	1½"			—	—	B16.18		
	1			1	1										PW533	3	1"			—	—			
						2					503003-P			6	PW534	3	¾"			—	—			
						2		1			503003-J	503003-P		46	PW535	20	2½"			—	—			
5	4					10				UAO					PW536	5	2"			—		—	CARBON STL. BLK	A-53 TY"E"G
										503003-B	503003-K			5	PW537	60	1½"				—	B16.18	CAST BRONZE	B-62
	14	1		6	8	11		10			503003-J	503003-K		45	PW538	23	1"				—			
	1	3			2	8	2	7			503003-K	503003-P		56	PW539	20	¾"			—	—			
						8		12							PW540	1	1"x3/8"			—	—			
															PW541	7	1½"			—	—			
															PW542	2	1"			—	—			
															PW543	4	1½"			—	—			
															PW544	1	1"			—	—			
															PW545	1	1½"			—	—	B16.18		
															PW546	7	1½"x1"			—	—			
	2														PW547	1	1½"			—	—			
															PW548	2	1"			—	—			
															PW549	4	1"			—	—			
	1				2									RES.	PW550	2	1½"			—	—	—	BRASS	B-43
															PW551	2	1¼"			—	—	—		
															PW552	9	1½"			—	—	—		
						4									~~PW553~~	~~9~~	~~1"~~			—	—	—		
									4	503003-D				1	PW554	4	2"			3000#	—	B16.11	CARBON STL	A-234
														4	PW555	~~2~~	~~1½"~~			~~150#~~	—		CAST BRONZE	B-62
										503003-B					PW556	2	2½"x1"			—	—	B16.18		
														RES.	~~PW557~~	~~1~~	~~2½"x1¼"~~			~~150#~~	—	—	~~BRONZE~~	~~B-283~~
									40	503005-A	503005-B			1	PW558	40	2"x¼"	30	170	3000#	—	B16.11	FGD. STEEL	A-105
										503003-B					PW559	1	1¼"	60	150	—	—	B16.18	CAST BRONZE	B-62
															PW560	2	1½"			—	—			
															PW561	3	2"x1½"			—	—			
						1									PW562	1	2"x1½"			—	—			
						1				UAO					PW563	2	2½"			—	—	—	CARBON STL. BLK	A-53 TY"E"G
										503002				1	PW564	2	2½"	30	170	40	—	B16.9	SMLS. STL	A-234 GR W
															PW565	2	3½"x2½"				—			
									2						PW566	3	2½"				—			
										503003-B					PW567	1	1¼"	60	150		—	B16.18	CAST BRONZE	B-62
															PW568	1	¾"x½"x½"				—			
															PW569	1	1"x3/8"x¾"				—			
										503003-J				4	PW570	4	3/8"				—			
				2	2									RES.	~~PW571~~	~~1~~	~~3/8"~~			—	—	—	~~BRASS~~	~~B-43~~
															~~PW572~~	~~1~~	~~1½"~~			—	—	—		
										UAO					PW573	1	1½"			—	—	—	CARBON STL BLK	A53 TY"E"G
										503003-K				5	PW574	1	2"x1"	—	—	—	7	B16.14	M.I.	A197
										503003-B					PW575	1	1"x½"x¾"	60	150		—	B16.18	CAST BRONZE	B-62
										UAO					PW576	8	¾"			—	—	—	CARBON STL BLK	AISI-C1015
	1									503003-B					PW577	1	1¼"x1"				—	B16.18	CAST BRONZE	B-62
															PW578	8	2½"			—	—	B16.18	CAST BRONZE	B-62
	2														PW579	1	2"			—	—			
															PW580	20	1½"			—	—			
								1			503003-J	503003-K		45	PW581	12	1¼"			—	—			
	1				4	9		1							PW582	14	1"			—	—			
				8		1	2								PW583	22	¾"			—	—			
											503003-K			5	PW584	12	½"			—	—			
				2		1	2	7							PW585	12	3/8"			—	—			
				2											PW586	4	½"x½"x3/8"			—	—			
						1			4	UAO					PW587	4	2"			—	—	—	CARBON STL BLK	A-53 TY"E"GRB
															PW588									
														RES.	~~PW589~~	~~5~~	~~1½"x½"~~	~~60~~	~~150~~	~~150#~~	—	—	~~BRONZE~~	~~B-283~~
										503003-B					PW590	6	1"x½"			—	—	B16.18	CAST BRONZE	B-62
					2										PW591	1	1"x½"			—	—			
															PW592	5	1"x1"x½"			—	—			
															PW593	5	¾"x1"			—	—			
										UAO					PW594	1	1¼"			—	—	—	CARBON STL BLK	AISI-C1015
										503003-B					PW595	2	1½"x1½"			—	—	B16.18	CAST BRONZE	B-62
										503004-C				3	PW596	2	½"	30	170°	—	—	—	BRASS	B-16
										503004-[illegible]	503004-D			2,4	PW597	3	½"			—	—	—		B-16
					3									RES.	~~PW598~~	~~4~~	~~1"x1¼"~~	~~60~~	~~150~~	~~150#~~	—	—	~~BRONZE~~	~~B-283~~
										503003-H				2	PW599	1	1¼"x1"	30°	170	3000#	-	B16.11	FGD. STL	A-105
		1								503006				2	PW600	1	6"			150#	-	—	STEEL	A-576
		1								503006				2	PW601	1	5"				-	—		
		1								503006				2	PW602	1	3"				-	-		
		1								503006				2	PW603	2	2½"				-	-		
		2								503005-G				7	PW604	2	1¼"x1½"	60	150	150#	-	—	BRONZE	B-283
	2														PW605									
										503003-B					PW606	2	1½"x1½"x1"	60	150	—	—	B16.18	CAST BRONZE	B-62
						1					503003-S			7	PW607	2	2½"x1½"x1½"			—	—			
	2														PW608	5	2½"			—	—			
						1									PW609	3	1¼"x¾"			—	—			

NOTES REF.#1	MANUFACTURER DWG.OR FIG. NO. OR EQUAL
93	FLAGG FIG. 3085
93	FLAGG FIG. 3001
-93	FLAGG FIG. 3085
	3001
-93	FLAGG FIG. 3080
	REF 2, FIG. 3A
-93	FLAGG FIG. 3001
	3030
	REF 3, FIG. 3
-93	FLAGG FIG. 3030
	3085
	3075
	3076
-93	FLAGG FIG. 3001
	3077
	3076
	3030
90-93	
-93	3001
	REF 2, FIG. 3A
-93	FLAGG FIG. 3030
	TUBE TURN PT. NO 20
	90
-93	TUBE TURN PT. NO. 1-T
	1
	22
	90
	20
	1
	5
	1-T
	1
	BONNEY FORGE
	TUBE TURN PT NO 1
	90
	1-R
	1 R
	2
	5
-93	BONNEY FORGE
90-93	
90-93	
0-93	
-93	FLAGG FIG. 3030
	3001
	3094
	3076
-93	BONNEY FORGE
	FLAGG FIG. 3001
	REF 2, FIG. 2
0-93	FLAGG FIG. 4171
90-93	BONNEY FORGE
0-93	BONNEY FORGE
-93	FLAGG FIG. 4171
	BONNEY FORGE
0-93	FLAGG FIG. 3001
	BONNEY FORGE
90-93	FLAGG FIG. 3076
	BONNEY FORGE
	~~CAMPBELL CHAIN~~
0-93	FLAGG FIG. 3012
	~~BONNEY FORGE~~
	~~REF 3, FIG. 2 (MOD)~~
90-93	FLAGG FIG 3001
	BONNEY FORGE
	FLAGG FIG. 3001
90-93	~~BONNEY FORGE~~
90-93	BONNEY FORGE
90-93	FLAGG FIG. 3092
	REF 3, FIG. 2
90-93	BONNEY FORGE
74, 90-93	BONNEY FORGE
90-93	BONNEY FORGE
90-93	FLAGG FIG. 3094

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-183-11-6

OCT 1980 8X

FRAME 2 OF 5

LIST OF FITTINGS

STRUCTURAL MODULAR UNIT APPLICATION

FITTING IDENT. NO.	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT 13	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181 -6
PW610																					
PW611																					
PW612					1																
PW613					10				5												
PW614					8																
PW615																					
PW616		1		4		2			13												
PW617																					
PW618																					
PW619																					
PW620																					
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PW714																					
PW715																					
PW716																					
PW717																					
PW718																					
PW719																					

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL	UNIT #1	UNIT #2	UNIT #3
								P.S.I.	°F												
503003-B					PW610	1	1½"x1¼"	60	150	—	—	B16.18	CAST BRONZE	B-62	RED. COUPLING, SOL'D. JT-CxC		NOS. 90-93	FLAGG FIG.3085			
					PW611																
503003-B					PW612	1	1"x3/4"	60	150	—	—	B16.18	CAST BRONZE	B-62	RED. 90° ELBOW, SOL'D. JT-CxC		NOS. 90-93	FLAGG FIG.3001			
↓	503003-J	503003-K		4,5	PW613	17	1¼"			—	—	↓	↓	↓	90° ELBOW, ↓ ↓		↓ ↓	↓ ↓ ↓			
SUPPLY				4	PW614	8	¾"			—	—	—	BRASS	B-43	NIPPLE, ONE END THD						
503003-B					PW615	1	1½"x¾"			—	—	B16.18	CAST BRONZE	B-62	RED. COUPLING, CxC SOL'D. JT		NOS. 90-93	FLAGG FIG.3085			
↓	503003-J	503003-K		4,5	PW616	32	½"			—	—	↓	↓	↓	90° ELBOW, ↓ ↓		↓ ↓	↓ ↓ 3001			
				~~RES.~~	~~PW617~~	~~1~~	~~½"~~						~~BRASS~~	~~B-43~~	~~NIPPLE, ONE END THD~~						
503003-B					PW618	2	3/8"x¼"			—	—	B16.18	CAST BRONZE	B-62	BUSHING, FLUSH - SOLD.JT.-FTGxC		NOS. 90-93	FLAGG FIG. 3080			
UAO					PW619	2	¼"			—		—	CARBON STL BLK	A-53 TY 'E' GR B	BHD SLEEVE			REF 2, FIG. 3A			
503003-B					PW620	6	¼"			—	—	B16.18	CAST BRONZE	B-62	90° ELBOW, SOL'D. JT. CxC		NOS. 90-93	FLAGG FIG.3001			
↓					PW621	2	¼"		↓	—	—	↓	↓	↓	TEE ↓ CxCxC		↓ ↓	↓ ↓ 3030			
SUPPLY				4	PW622	2	¼"		REG.	—	—	—	BRASS	B-43	NIPPLE ONE END THD -6" LG						
—				~~RES.~~	~~PW623~~	~~1~~	~~1½"~~		~~150~~			—	~~COPPER~~	~~B-36~~	~~OPEN OVAL TOP FUNNEL, ALLOY 220 / HALF-HARD SHEET~~			~~REF 3, FIG. 3~~			
503003-B					PW624	5	1¼"x1¼"x1"			—	—	B16.18	CAST BRONZE	B-62	RED. TEE, SOL'D. JT		NOS. 90-93	FLAGG FIG.3030			
					PW625	1	1"x3/8"			—	—				RED. COUPLING,			3085			
					PW626	1	¼			—	—				ADAPTER, C x FPT			3075			
↓					PW627	1	3/8"x½"	↓	↓	—	—	↓	↓	↓	↓ C x MPT ↓		↓ ↓	↓ ↓ 3076			
—				~~RES.~~	~~PW628~~	~~1~~	~~¼"~~	~~60~~	~~150~~			—	~~BRASS~~	~~B-43~~	~~NIPPLE, PLAIN~~						
—				~~RES.~~	~~PW629~~	~~2~~	~~¾"~~	~~60~~	~~150~~			—	~~BRASS~~	~~B-43~~	~~NIPPLE, ONE END THD~~						
503003-B					PW630	3	¾"			—	—	B16.18	CAST BRONZE	B-62	90° ELBOW, CxC SOL'D. JT		NOS. 90-93	FLAGG FIG.3001			
					PW631	5	3/8"			—	—				FTG.ADAPTER FTG.x FPT			3077			
					PW632	1	1"			—	—				ADAPTER C x MPT			3076			
					PW633	1	1"x1"x3/8"			—	—				RED. TEE, CxCxC			3030			
					PW634	1	3/8"			—	—				TEE, CxCxC			↓			
					PW635	1	1"x3/8"x1"			—	—				RED. TEE, CxCxC		157, 90-93				
↓					PW636	3	1"			—	—	↓			90° ELBOW, CxC ↓		↓ 90-93	↓ ↓ 3001			
UAO					PW637	1	2"			—		—	CARBON STL BLK	A-53 TY 'E' GR B	BHD SLEEVE			REF 2, FIG. 3A			
503003-B					PW638	1	1¼"x1¼"x½"			—	—	B16.18	CAST BRONZE	B-62	RED. TEE CxCxC SOL'D. JT		NOS. 90-93	FLAGG FIG.3030			
↓					PW639	1	2"x2"x½"	↓	↓	—	—	↓	↓	↓	↓ CxCxC ↓		↓ ↓	↓ ↓ ↓			
503002 H				2	PW640	2	3"	30	170	40	.216	B16.9	SMLS. STEEL	A-234 GR WPB	TEE B.W.		↓ ↓	TUBE TURN PT. NO 20			
503002 H				2	PW641	2	3"x2½"	↓	↓		.216x.203	↓	↓		REDUCER, CONC., ↓		↓ ↓	90			
503002					PW642	4	5"	30	170	40	—	B16.9	SMLS. STEEL	A-234 GR WPB	90° ELBOW, LONG TANGENT ONE END BW		NOS. 90-93	TUBE TURN PT NO.1-T			
SUPPLY					PW643	2	5"				—				↓ ↓ , L.R. BW			1			
503002					PW644	2	5"x5"x4"				—				RED. TEE,			22			
					PW645	4	5"x4"				—				REDUCER, CONC.			90			
↓					PW646	1	4"				—				TEE,			20			
SUPPLY					PW647	9	4"				—				90° ELBOW, L.R.			1			
503002					PW648	3	4"				—				45° , L.R.			5			
↓					PW649	1	2"				—				90° , LONG TANGENT ONE END, BW			1-T			
SUPPLY					PW650	3	2"			↓	—	↓	↓	↓	, L.R. BW.			↓ ↓ ↓ 1			
↓				4	PW651	5	1"	↓	↓	3000#	—	B16.11	FGD. STEEL	A234	↓ ↓ , SW.		↓ ↓	BONNEY FORGE			
SUPPLY				2	PW652	6	6"			40	.280	B16.9	SMLS. STEEL	A-234, GR WPB	90° ELBOW, L.R., B.W.			TUBETURN PT NO. 1			
503002 H				2	PW653	1	6"x5"				.280x.258				REDUCER, CONC.,			90			
503002 H				2	PW654	2	4"x3"				.237x.216				90° ELBOW, REDUCING, L.R.			1-R			
503002 H				2	PW655	1	3"x2"				.216x.154				↓			1 R			
Supply				2	PW656	4	3"				.216							2			
503002 H				2	PW657	2	3	↓			.216	↓	↓		45°		↓ ↓	↓ ↓ 5			
503003-B					PW658	1	1"x½"	30	170	3000#	—	B16.11	FGD. STEEL	A234	RED. COUPLING, SW		NOS. 90-93	BONNEY FORGE			
503005-A					PW659	2	5-4"x1"			STD.WT.	—	—		A105	SOCKOLET - I.P.S. RUN & OUTLET		171, 90-93				
					PW660	2	4"x2"			STD.WT.	—	—		↓	↓ ↓ ↓ ↓		171, 90-93				
SUPPLY					PW661	1	1"	↓	↓	3000#	—	B16.11	↓	A234	TEE, SW		↓ 90-93	↓			
503003-B	503003-K			5	PW662	2	2"x2"x1"	60	150	—	—	B16.18	CAST BRONZE	B-62	RED. TEE, CxCxC SOL'D. JT		NOS. 90-93	FLAGG FIG. 3030			
					PW663	1	2"x2"x1½"			—	—				↓ CxCxC			↓			
↓	503003-J	503003-K		4,5	PW664	10	3/8"			—	—	↓			90° ELBOW CxC			3001			
↓	503003-K			5	PW665	16	1½"	↓	↓	—	—	—			UNION CxC			3094			
503003-H	503003-J			2,4	PW666	2	1½"x1½"	60	150	—	—	B16.18	↓	↓	ADAPTER. CxMPT		↓ ↓	↓ ↓ 3076			
SUPPLY					PW667	4	1½"	30	170	3000#	—	B16.11	FGD. STL	A234	90° ELBOW, SW		NOS. 90-93	BONNEY FORGE			
503003-B	503003-K	503003-S 503003-P		5,6,7	PW668	5	2"	60	150	—	—	B16.18	CAST BRONZE	B-62	↓ ↓ CxC SOL'D JT		↓ ↓	FLAGG FIG.3001			
↓					PW669	2	1¼"	↓	↓	—	—	↓	↓	↓	↓ ↓ ↓ ↓		↓ ↓	↓ ↓ ↓			
UAO					PW670	1	1"	30	150	-	.200	—	CARBON STEEL	A-53 TY 'E' GR B	BHD SLEEVE			REF 2, FIG. 2			
SUPPLY					PW671	1	1¼"x1"	60	170	125#	—	B16.15	CAST BRONZE	B-62	BUSHING SCR'D.		NOS. 90-93	FLAGG FIG. 4171			
				~~RES.~~	~~PW672~~	~~1~~	~~½"~~	↓	↓	—	—	—	~~BRASS~~	~~B-43~~	~~NIPPLE THD BOTH ENDS~~						
503005-C				2	PW673	1	6"x2"	30	170	3000#	—	—	FGD. STL	A-105	WELDOLET (IPS RUN & OUTLET)		NOS. 172, 90-93	BONNEY FORGE			
				~~RES.~~	~~PW674~~	~~1~~	~~1½"x6"~~	~~60~~	~~150~~	—	—	—	~~BRASS~~	~~B-43~~	~~NIPPLE, THD. ONE END~~						
503005-C				2	PW675	1	8-3"x1½"	30	170	3000#	—	—	FGD STL	A-105	THREADOLET (IPS RUN & OUTLET)		NOS. 170, 90-93	BONNEY FORGE			
SUPPLY					PW676	1	1¼"x¾"	60	150	125#	—	B16.15	CAST BRONZE	B-62	RED. BUSHING, SCREWED		NOS. 90-93	FLAGG FIG. 4171			
503005-C				2	PW677	1	6-5"x1½"	30	170	3000#	—	—	FGD. STL	A-105	SOCKOLET (IPS RUN & OUTLET)		171,	BONNEY FORGE			
503005-C					PW678	4	5-4"x1"								THREADOLET		170,				
503005-E				2,5	PW679	1	3½-3/8"x½"			↓			↓	↓	↓ ↓		↓ ↓ ↓	↓ ↓			
503003-B					PW680	1	1"x½"	60	150	—	—	B16.18	CAST BRONZE	B-62	90° RED ELBOW, SOL'D. JT-CxC		NOS. 90-93	FLAGG FIG.3001			
SUPPLY					PW681	1	1½"x1"	30	170	3000#	—	B16.11	FGD. STL.	A105	RED. BUSHING, SCRD.			BONNEY FORGE			
503003-B					PW682	1	1"x¾"	↓	↓	3000#	—	B16.11	↓	A234	90° RED. ELBOW, SW.			↓			
				~~RES.~~	~~PW683~~	~~0'-5"~~	~~1½"~~	~~60~~	~~150~~	—	~~.150~~	—	~~BRASS~~	~~B-43~~	~~PIPE SEAMLESS~~		~~↓ ↓~~	~~↓~~			
				~~RES.~~	~~PW684~~	~~2'-0"~~	~~1"~~						↓	↓	↓						
503003-B					PW685	1	½"	↓	↓	—	—	B16.18	CAST BRONZE	B-62	ADAPTER, SOLD. JT. CxMPT		NOS. 90-93	FLAGG FIG.3076			
503005-C				2	PW686	2	10-6"x1"	30	170	3000#	-	-	FGD. STL	A-105	THREADOLET (IPS RUN & OUTLET)		170, ↓ ↓	BONNEY FORGE			
				~~RES.~~	~~PW687~~	~~6'~~	~~2/0x3/16" DIA~~	~~30~~	~~170~~		—	—	~~CARBON STL GALV~~	~~A-576 GR 1015~~	~~CHAIN, STRAIGHT LINK~~	~~USE FOR LOCKING V-3 & V12~~		~~CAMPBELL CHAIN~~			
503003-B					PW688	2	2"	60	150	—	—	B16.18	CAST BRONZE	B-62	45° ELBOW, CxC SOL'D. JT		NOS. 90-93	FLAGG FIG. 3012			
					PW689	7	1½"			—											
					PW690	4	1¼"			—											
↓					PW691	2	1"			—		↓	↓	↓	↓ ↓ ↓ ↓			↓ ↓ ↓			
				~~RES.~~	~~PW692~~	~~1~~	~~1½"x1"~~			~~150#~~	—	—	~~BRONZE~~	~~B-283~~	~~BRAZOLET,~~		↓ ↓	~~BONNEY FORGE~~			
				~~RES.~~	~~PW693~~	~~2~~	~~2"~~			—			~~COPPER~~	~~B-36~~	~~FUNNEL OPEN ROUNDTOP, ALLOY 220 HALF-HARD TEMPER~~			~~REF 3, FIG. 2 (MOD)~~			
503003-B					PW694	98	2"	↓	↓	—	—	B16.18	CAST BRONZE	B-62	90° ELBOW, CxC SOL'D. JT		NOS. 90-93	FLAGG FIG 3001			
503005-A					PW695	1	5"x¾"	30	170	3000#	—	—	FGD. STEEL	A105	THREADOLET - I.P.S. RUN & OUTLET			BONNEY FORGE			
503003-B					PW696	1	1"x1"x½"	↓	↓	↓	—	B16.11	↓	A234	RED. TEE, SW		↓ ↓	↓			
↓					PW697	1	1½"x1¼"	60	150	—	—	B16.18	CAST BRONZE	B-62	90° RED. ELBOW, SOL'D. JT.-CxC			FLAGG FIG.3001			
				~~RES.~~	~~PW698~~	~~1~~	~~4"~~	—	—	~~40~~	—	~~B36.10~~	~~CARBON STL. BLK~~	~~A-53 TY 'E' GR B~~	~~DECK COAMING, 4" LONG~~		~~NOS. 90-93~~	~~BONNEY FORGE~~			
				~~RES.~~	~~PW699~~	~~1~~	~~¾"~~	~~30~~	~~170~~	~~3000#~~	—			~~A105~~	~~ELBOLET, SCRD. OUTLET~~		↓ ↓	↓			
					~~PW700~~	~~1~~	~~¼"~~								~~SOCKOLET - IPS. RUN & OUTLET~~						
				↓	~~PW701~~	~~1~~	~~½"~~	↓	↓	↓			↓	↓	~~ELBOLET, SCRD. OUTLET~~		↓ ↓	↓			
				~~RES.~~	~~PW702~~	~~1~~	~~1"x½"~~	~~60~~	~~150~~	~~150#~~	—	—	~~BRONZE~~	~~B-283~~	~~BRAZOLET, THD~~						
				~~RES.~~	~~PW703~~	~~3~~	~~3"~~	~~30~~	~~170~~	~~80~~	—	~~B36.10~~	~~CARBON STL. BLK~~	~~A-53 TY 'E' GR B~~	~~CLEARANCE COLLAR~~						
				↓	~~PW704~~	~~2~~	~~2½"~~			↓	—	↓	↓ ↓	↓	↓ ↓						
SUPPLY					PW705	2	2"	↓	↓	3000#	—	B16.11	↓ ↓ GALV	A234	90° ELBOW, SW		NOS. 157, 90-93	BONNEY FORGE			
503003-B					PW706	2	2"	60	150	—	—	B16.18	CAST BRONZE	B-62	CAP, SOL'D. JT		90-93	FLAGG FIG.3092			
UAO				4	PW707	1	1"			— ↓	—				FUNNEL, OPEN ROUND TOP, FILL			REF 3, FIG. 2			
503005-A					PW708	2	5-4"x1"	30	170	3000#	—	—	FGD. ST'L.	A105	SOCKOLET - I.P.S. RUN & OUTLET		NOS. 90-93	BONNEY FORGE			
SUPPLY					PW709	4	2"				—	B16.11		A234	90° ELBOW, SW						
					PW710	1	2"			↓	—	↓	↓	↓	COUPLING, ↓		↓ ↓	↓			
					PW711	2	1½"			80	—	B36.10	CARB. ST'L.	A53 TY 'E' GR B	NIPPLE, THD ONE END, 3" LONG						
					PW712	2	1½"			3000#	—	—	FGD. STL.	A105	UNION, SW		NOS. 174, 90-93	BONNEY FORGE			
					PW713	2	1½"			80	—	B36.10	CARB. STL.	A53 TY 'E' GR B	NIPPLE, 3" LONG						
↓					PW714	2	1½"			↓	—	↓	↓	↓	↓ ↓						
503003-B					PW715	1	1½"x1½"x2"	↓	↓	3000#	—	B16.11	FGD. ST'L.	A105	RED. TEE, SW		NOS. 90-93	BONNEY FORGE			
				~~RES.~~	~~PW716~~	~~2~~	~~1½"x¾"~~	~~60~~	~~150~~	~~150#~~	—	—	~~BRONZE~~	~~B283~~	~~BRAZOLET, THD~~		↓ ↓	↓			
Supply				2	PW717	2	1"	30	170	3000#	-	B16.11	FGD. STL	A-105	90° ELBOW SCRD.		↓ ↓	↓			
				~~RES.~~	~~PW718~~	~~1~~	~~¾"~~	~~60~~	~~150~~	—			~~COPPER~~	~~B-88~~	~~NIPPLE, 3" LONG~~						
503003-B					PW719	1	¾"	↓	↓	—	—	B16.18	CAST BRONZE	B-62	UNION, SOL'D. JT - CxC		NOS. 90-93	FLAGG FIG.3094			

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-183-11-6

Oct 1980

8X

FRAME 3 OF 5

LIST OF FITTINGS

SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
"x¾"	60	150	—	—	B16.18	CAST BRONZE	B-62	BUSHING, FLUSH-FTG x C SOL'D. JT		NOS. 90-93	FLAGG FIG. 3080
"x⅜"			—	—				ADAPTER C x MPT			3076
1"			—	—				90° FTG ELBOW, FTG x C			3004
2½"			40	-	B16.9	SMLS STL	A234 GR WPB	90° ELBOW L.R. BUTT WELD			TUBE TURN PT#1
1½"			—	—	—	20.4# STEEL PT	ABS GR-A	TK DRN DOUBLER PT 5"O.D x 2" I.D.			ELEV. "7-B", REF#4
2"x1"			125#	—	B16.15	CAST BRONZE	B-62	BUSHING HEX SCRD		NOS. 90-93	FLAGG FIG 4171
1"			—	—	B16.18			ADAPTER FEM THR'D X MALE F.F. SILB			5063
2½"x1½"			—	—				90° ELBOW CxC SOLDER JOINT			3001
¾"x½"			—	—				COUPLING RED CXC			3085
1½"x¾"			—	—				ADAPTER FTGxFPT			3077
2½"x2"x1½"			—	—				TEE CxCxC			3030
1½"x1½"x½"			—	—							
⅜"			—	—				90° ELL CxC			3001
½"x¼"			125#	—	B16.15			BUSHING HEX SCR'D (ROUGH)			4171
2"x1¼"			—	—	B16.18			FLUSH BUSHING FTGxC SOL'D. JT.			3080
2½"x2½"x¾"			—	—				TEE RED. CxCxC			3030
2"x2"x⅜"			—	—							
"x1"x½"			—	—							
6"			150#	—	—	STEEL	ABS GRA	ORIFICE PLATE 3.0625" HOLE, ¼" THK.		—	BS-2UF TYPE "A"
¼"				—		BRONZE	B-62	MOISTURE SEPARATOR SCRD.		NOS. 90-93	DEXTER TYPE "A"
¼"			—	—	—		Comm'l	TANK VALVE - SCR'D.			SCHRADER NO 645A6
2½"x⅜"	60	150	150#	—	—		B283	BRAZOLET, THD. I.P.S. RUN & OUTLET			BONNEY FORGE
⅜"x¼"			—	—	—	CAST BRZ	B-62	ADAPTER CXF SOL'D. JT.			FLAGG FIG. 3075
¼"x⅛"			—	—	—	BRASS	B16.	¼" O.D. x ⅛" MALE STR THRD CONVERTOR			HOKE - 4 COM 2
¼"x½"x½"			—	—	B16.18	CAST BRZ	B-62	TEE CxCxC			FLAGG FIG. 3030
¼"OD			—	—		BRASS	B-283	UNION TEE			SWAGELOK FIG. 400-3
½"x1¼"			—	—	—			1½ F. I.P.S. x 1¼" O.D. SLIP JT. CONNECTOR			NIBCO FIG# 803-7
—			—	—	—	STEEL	ABS GR. A	2½"x2½"x 3/16 ∠ CUT TO SUIT	DRINKING FOUNTAIN SUPPORTS		—
—			—	—	—	BRASS	B-16	5/8" OD x ½" MPT. CONNECTOR			SWAGELOK FIG. 1010-1-8
½"x1½"OD			—	—	—	CAST BRASS		1½ O.D. x 1½" I.P.S. SLIP JOINT NUT, WASHER & FRICTION RINGS			AMER. STD. MR-70-40
1½-2½"x½"	60		3000#		B16.2.1	FORGED ST'L	A105	45° LATROLET - THRD. I.P.S. RUN & OUTLET			BONNEY FORGE
¾-1½-⅜"					B16.18	CAST BRONZE	B-62	TEE REDUCING CxCxC SOL'D. JT.		NOS. 90-93	FLAGG-FIG# 3030
2½"x2"								RED. COUPLING CxC			3085
1½"								CAP C			3092
¾-1½-⅜"								TEE REDUCING CxCxC			3030
½"x⅜"								90° ELBOW-REDUCING CxC			3001
1¼"								TEE- SOLD. JOINT C×C×C			3030
½"x2"								ADAPTER - C×MPT			3076
6"			—	—	—	STEEL	A 519 GR. 1015 H.F	PIPE SLEEVE			EF496 FIG.#1
5"			—	—	—		A 53 TY E OR S GR.B				
3"			—	—	—		A 519 GR. 1015 H.F				
2½"			—	—	—		A 53 TY S GR.B				
2"			—	—	—						
4"			—	—	—						
¼"x2"			150#		—	BRONZE	B-283	BRAZOLET, THRD. I.P.S. RUN & OUTLET		NOS. 90-93	BONNEY FORGE
1"x¾"			—		B16.18	CAST BRONZE	B-62	ADAPTER CxFPT SOLD. JT.		NOS. 90-93	FLAGG-FIG.# 3075
2"x½"x2"			—					TEE REDUCING CxFxC SOL'D. JT.			3031
1½"x2"			—					ADAPTER - CxFPT SOLD. JT.			3075
2"x1"			—		B16.15			SCREWED HEXAGON BUSHING			4171
1"			—		—	BRASS	B-43	NIPPLE THR'D BOTH ENDS (3" LONG)		—	—
1¼"x1¼"			—		B16.18	CAST BRONZE	B-62	ADAPTER - Cx MPT		NOS. 90-93	FLAGG FIG# 3076
1¼"			—		—			UNION CxC SOLD. JT.			3094
1"			—			BRONZE	B-62	VACUUM BREAKER - FEMALE SCR'D ENDS			WATTS FIG. #288-A
1"x½"x½"	—	—	—	—	B16.18	CAST BRONZE	B-62	RED. TEE - SOL. JT. - C×C×C			FLAGG. FIG.# 3030
1"	—	—	—	—				ADAPTER - FITT×F-NPT			FIG.# 3077
1"x¾"x¾"	—	—	—	—				RED. TEE - SOL. JT. - C×C×C			FIG.# 3030

PIPING PACKAGE UNIT APPLICATION / STRUCTURAL MODULAR UNIT APPLICAT

DESCRIPTION	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20	UNIT 1	UNIT	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT 13	UNIT	UNIT	UNIT
BUSHING, FLUSH-FTG x C SOL'D. JT																																				
ADAPTER C x MPT																																				
90° FTG ELBOW, FTG x C																													1							
90° ELBOW L.R. BUTT WELD																							1	1					10				5			
TK DRN DOUBLER PT 5"O.D x 2" I.D.																													8							
BUSHING HEX SCRD			3																																	
ADAPTER FEM THR'D X MALE F.F. SILB																					12					1		4		2			13			
90° ELBOW CxC SOLDER JOINT																																				
COUPLING RED CXC																																				
ADAPTER FTGxFPT																							1													
TEE CxCxC																							1													
																							1													
90° ELL CxC																																				
BUSHING HEX SCR'D (ROUGH)																																				
FLUSH BUSHING FTGxC SOL'D. JT.																																				
TEE RED. CxCxC																																				
																												1								
ORIFICE PLATE 3.0625" HOLE, ¼" THK.																																				
MOISTURE SEPARATOR SCRD.																																				
TANK VALVE - SCR'D.																																				
BRAZOLET, THD. I.P.S. RUN & OUTLET																																				
ADAPTER CXF SOL'D. JT.																																				
¼" O.D. x ⅛" MALE STR THRD CONVERTOR																										1										
TEE CxCxC																												1								
UNION TEE																																				
1½ F. I.P.S. x 1¼" O.D. SLIP JT. CONNECTOR																										1										
2½"x2½"x 3/16 ∠ CUT TO SUIT																																				
5/8" OD x ½" MPT. CONNECTOR																													1							
1½ O.D. x 1½" I.P.S. SLIP JOINT NUT, WASHER & FRICTION RINGS																													1							
45° LATROLET - THRD. I.P.S. RUN & OUTLET																								2												
TEE REDUCING CxCxC SOL'D. JT.																								2												
RED. COUPLING CxC																																				
CAP C																								2												
TEE REDUCING CxCxC																																				
90° ELBOW-REDUCING CxC																																				
TEE- SOLD. JOINT C×C×C																																				
ADAPTER - C×MPT																																				
PIPE SLEEVE 6"																																				
5"																																				
3"																								2												
2½"																								5												
2"																								6												
4"																								1												
BRAZOLET, THRD. I.P.S. RUN & OUTLET																								2												
ADAPTER CxFPT SOLD. JT.																								1												
TEE REDUCING CxFxC SOL'D. JT.																								4												
ADAPTER - CxFPT SOLD. JT.																								2												
SCREWED HEXAGON BUSHING																																				
NIPPLE THR'D BOTH ENDS (3" LONG)																																				
ADAPTER - Cx MPT																																				
UNION CxC SOLD. JT.																																				
VACUUM BREAKER - FEMALE SCR'D ENDS																																	2			
RED. TEE - SOL. JT. - C×C×C																																	1			
ADAPTER - FITT×F-NPT																										1		3					6			
RED. TEE - SOL. JT. - C×C×C																											8	8								
																								2												
																							1						4							
																								1												
																								1												
																								1												
																								4												
																								1												
																							1													
																								2												
																																	2			

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Oct 1980
8X

BUILDERS PLAN NO. M4650-183-11-6
FRAME 4 OF 5

PIPING PACKAGE UNIT APPLICATION																				STRUCTURAL MODULAR UNIT APPLICATION																									REQUISITION NO.			CODE NO. (FUTURE USE)	ALT NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM STD	MATE
UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT	UNIT	UNIT	UNIT 13	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181-6									P.S.I.	°F				
																																													503003-B					PW720	1	1"x3/4"	60	150	—	—	B16.18	CAST BR
																																																		PW721	1	1/4"x3/8"			—	—		
																																																		PW722	1	1"			—	—		
																							4																					4	SUPPLY				1,4	PW-723	8	2½"			40	-	B16.9	SMLS
																																												2	CUTTINGS			CARD 8640-1 MARK 724	4,5	PW-724	2	1½"			—	—	—	20.4# STE
																						1																							503003-J				4	PW-725	1	2"x1"			125#	—	B16.15	CAST BR
																						1																							503003-S				4,7	PW-726	1	1"			—	—	B16.18	
																						1																							503003-J				4	PW-727	1	2½"x1½"			—	—		
																				1		1																											4	PW-728	2	3/4"x1/2"			—	—		
																						1																											4	PW-729	2	1¼"x3/4"			—	—		
																						2																								503003-S			4,7	PW-730	2	2½"x2"x1½"			—	—		
																				3		1										6														503003-K			4,5	PW-731	10	1½"x1½"x½"			—	—		
																				2																													4	PW-732	2	3/8"			—	—		
																																													SUPPLY				4	PW-733	2	½"x¼"			125#	-	B16.15	
																												1																	503003-J				4	PW-734	1	2"x1¼"			—	—	B16.18	
																												1																					4	PW-735	1	2½"x2½"x3/4"			—	—		
																												1																					4	PW-736	1	2"x2"x3/8"			—	—		
																									1		1																						4	PW-737	2	1"x1"x½"			—	—		
																																													UAO				4,8	PW-738	1	6"			150#	—	—	STEE
																						1																							503013				4	PW-739	1	1/4"						BRON
																						1																							~~503003-J~~	503000-M			4,6	PW-740	1	1/4"	—	—	—	—	—	
																											1																		503005-D				4	PW-741	1	2½"x3/8"	60	150	150#	—	—	
																											1																		503003-J				4	PW-742	2	3/8"x1/4"			—	—	—	CAST B
																											2																		503004-D				4	PW-743	4	1/4"x1/8"			—	—	—	BRA
																											1																		503003-J	1			4	PW-744	1	1½"x½"x½"			—	—	B16.18	CAST
																										1	1																		503004-D				4	PW-745	2	1/4" OD			—	—	—	BRA
																											1																		503003-J				4	PW-746	1	1½"x1¼"			—	—	—	
																											16'0																		UAO				4	PW-747	16'-0"	—			—	—	—	STEE
																											3																		503004-D				4	PW-748	3	—			—	—	—	BRA
																											1																		503003-J				4	PW-749	1	1½"x1½" OD			—	—	—	CAST B
																																													503005-D				4	PW-750	1	1½-2½"x½"	60		3000#	—	B16.2.1	FORGED
																											1					2													503003-K	503003-U			5,8	PW-751	3	1¼"x1¼"x3/8"					B16.18	CAST BRO
																																1																	5	PW-752	1	2½"x2"						
																																1																	5	PW-753	1	1½"						
																																4																	5	PW-754	4	1¼"x1¼"x3/8"						
																																1																	5	PW-755	1	½"x3/8"						
																											1																						5	PW-756	1	1¼"						
																						1				1	1																			503003-P			5,6	PW-757	3	1½"x2"						
																							11																						UAO				5	PW-758	11	6"			—	—	—	STEEL
																							5																										5	PW-759	5	5"			—	—	—	
																							17																										5	PW-760	17	3"			—	—	—	
																							7																										5	PW-761	7	2½"			—	—	—	
																							7																										5	PW-762	7	2"			—	—	—	
																							2																										5	PW-763	2	4"			—	—	—	
																												1																	503005-F				6	PW-764	1	1/4"x2"			150#		—	BRONZ
																												2																	503003-P				6	PW-765	2	1"x3/4"			—		B16.18	CAST BRO
																												1																	503003-S				7	PW-766	1	2"x½"x2"			—	—		
																						4																											7	PW-767	4	1½"x2"			—	—		
																						1																											7	PW-768	1	2"x1"			—	—	B16.15	
																						1																							SUPPLY				7	PW-769	1	1"			—	—	—	BRAS
																						1																							503003-S				7	PW-770	1	1¼"x1¼"			—	—	B16.18	CAST
																						1																											7	PW-771	1	1¼"			—	—	—	
																				1		1																							503017-A				7	PW-772	2	1"					—	BRONZ
																																5													503003-U				8	PW-773	5	1"x½"x½"	—	—	—	—	B16.18	CAST BRO
																																6													503003-U				8	PW-774	6	1"	—	—	—	—		
																																1													503003-U				8	PW-775	1	1"x3/4"x3/4"	—	—	—	—		

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BUILDERS PLAN NO. M4650-183-11-6

FRAME 5 OF 5

AUTOMATION INDUSTRIES, INC.
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GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-191-11-1
NOV 1980 10X
FRAME 1 OF 5

LIST OF MATERIALS FOR ONE SHIP

ITEM	NAME	QTY.	MAT'L.	SPECS.	DESCRIPTION	REMARKS	WT	REMARKS	REQ'N NO.
1	AXIAL FLOWFAN (EXH)	1	VARIOUS		REF 2 ITEM NO. 1				500027
2		1			2				
3	(SUP)	1			3				
4		1			4				
5		1			5				
6	FAN BELLMOUTH 54" DIA.	5							
7	1/2" HALF - COUPLING - SCR'D.	1	STL. GALV.	ASTM A105	ANSI B16.11 BONNEY FORGE	REF. 3 SHT 26 "5-A" ON REF. 7		SEE NOTE 90-93 REF 26	504803-A
8	1/2" PIPE PLUG - SCR'D.	1	BRASS	B62	.15 FLAGG FIG. 4173				
9	FAN BELLMOUTH 48-1/4" DIA.	2	VARIOUS						500027
10	MANUAL FIRE DAMPER	3			60"X48"X6" LG			SEE NOTE 96, REF. 26	—
11		2			72"X72"X6" LG				—
12									
13	FLEX CONNECTIONS 54" DIA.	5	VARIOUS		REF 3 SHT 33	FOR ITEM NO 1, 2, 3, 4 & 5			*
14									
15	LOUVER 4'-6" W X 10'-0" H	1	VARIOUS		REF 3 SHT 36	WITH CANVAS COVER REF. 9			*
16	LOUVER 4'-6" W X 10'-0" H	3			REF 3 SHT 36	WITH CANVAS COVER REF. 9			*
17	20"X12" F.O.	1							*
18	VENT DIFFUSER	13	VARIOUS		15"X15" TYPE RVCQ-40	AGITAIR		ORD. ON REF. 6	—
19	BALANCING DAMPER TYPE II	1			REF 3 SHT 29	19" x 24"			[illegible]
20	TYPE "E" TERMINAL 6" DIA.	1	VARIOUS		REF 3 SHT 17	JUNIPER IND., JE-102 W/JE-103A DAMPER CONTROL			
21	8"	1							
22	10-1/2"	1							
23	11"	6							
24	11-1/2"	4							
25	12"	13							
26	12-1/2"	2							
27	13"	11							
28	13-1/2"	3							
29	14"	5							
30	14-1/2"	4							
31	15"	5							
32	TYPE "J" EXHTERM 5" DIA.-8-3/4" DIAL-6-3/8	1	STL GALV		18	JE-108			
33	TYPE "J" SUPTERM 5" DIA.-8-3/4" DIAL-6-3/8	1			18				
34	UNIVERSAL JOINT	1	STEEL	COMM'L.	1" BORE	FOR OPER GEAR		CURTIS CAT#C6528	504860
35	STANDARD PIPE 1-1/4" DIA.	1 L.F.	STL GALV	A106-GR.B	1-1/4" DIA.				UAO
36	INSULATION 1/2" VAPOR SEAL	575 #	VARIOUS		FIBREGLASS	SEE GEN. NOTE 11 & 12		ORD. ON REF 19	—
37	DETENT PIN ASS'Y	5	BRASS	ASTM B16	3/8" DIA. 3/4" GRIP	FOR OPER. GEAR			
38	CHAIN	5 LIN FT			AM SINGLE JACK CHAIN NO 16			CAMPBELL CHAIN CO.	504862
39	TAPER PIN #2 X 1-3/4"	110	STEEL	COMM'L.					504830-A
40	STUFFING BOX	7	VARIOUS	COMM'L.	SIZE 1" FIG. 405 (BROOKS)			[illegible]	504876
41	ROD	78 L.FT.	STEEL CR.	A576 GR. 1018	1" DIA				504892
42	HINGED JOINT, CONSOLIDATED	12	VARIOUS	COMM'L	SIZE 1" CHJ-3A (ITT-HENZE)				504860-A
43	COUPLING	26	STEEL	COMM'L	1" PC-3A				
44	COAMING 15.3# PL	2		ABS-GRA	REF 3 80"X84" 6" RC L=7	MAKE FROM PC NO. 75			*
45	15.3	2			60"X48" 6" RC L=7				*
46	30.6	1			33"X20" 4" RC L=6	76			*
47	15.3	1			20"X15" 3" RC L=4	SEE DET. 9-A SH. NO. 2			*
48	15.3	1			16"X32-1/2" F.O. L=6	MAKE FROM PC. NO 75			*
49	30.6	1			80"X21-1/2" 4" RC L=6	76			*
50	BALANCING DAMPER TYPE I	1	VARIOUS		REF 3 SHT #28	12-1/2" DIA.			
51									
52	DEFLECTOR 7.65# PL	60 #	STEEL	ABS-GR.A		DET. "13-A"			*
53	SPOOLS 15.3# PL	2	STEEL	ABS-GR.A	REF 3 72"X72" S.O. L=7"	MAKE FROM PC. NO. 75			*
~~54~~	~~30.6# PL~~	~~1~~			~~42"X8" F.O. L=6"~~	~~76~~			*
55	10.2#	3			5" DIA	74			*
56		1			15"X7" F.O.				*
57		1			8" DIA				*
58		2			15" DIA				*
59	15.3#	1			15" DIA	75			*
60	10.2#	1			12"X16-1/2" 3" RC	74			*
61									
62	10.2#	1			11" DIA	74			*
63	10GA.	1		A525	5-1/2" DIA	72			*
64									
65	10.2#	1		ABS-GRA	15"X9" 3" RC	74			*
66	15.3#	1			10" DIA 9"	73			*
67	12.8#	3			60"X48" RECT 6"	77			*
68									
69	7.65#	1			20"X10" RECT.	73			*
70	SHEET STEEL 20 USSG	80 #	SHT STL GALV	A525		FOR COLLAR PLATES			*
71	SHEET STEEL 16 USSG	5835 #	SHT STL GALV			FOR DUCTWORK			*
72	10 USSG	1009 #				SPLS & FLGS			*
73	(48"x120") 14 USSG	96				FOR DUCTWORK			*
74	PLATE STEEL 10.2# PL	150 #	STEEL	ABS-GR. A		SPOOLS & OPER. GEAR & DUCTS			*
75	15.3# PL	50 #				& COAMINGS			*
76	30.6# PL	13 #				COAMINGS			*
77	12.8# PL	85 #				FOR			*
78	SHEET #18 USSG	280 #	SHT. STL GALV	A525					*
79	SPOOLS 20.4# PL	1	STEEL	ABS GRA	REF 3 16"x16"-3" R.C. - L=9"				*
80	20.4# PL	1			40"x20"-3" R.C. - L=9"				*
81	15.3# PL	1			16"x16"-3" R.C. - L=9"				*
82	15.3# PL	1			36"x18"-3" RC-L=6"				*
83	15.3# PL	3			18"x18"-3" R.C-L=6"				*
84	LASHING HOOKS 3/8" DIA.	284	STEEL	SAE 1020	REF 3 SHT 32	FOR ITEM NOS. 16, 44 & 45			504829
85	BALANCING DAMPER TYPE II	2	VARIOUS		29	15" x 8-1/2"			*
86		2				15-1/2" x 8-1/2"			*
87	1/2" WM SCREEN 66-1/4" DIA.	5	STL GALV.	COMM'L.	REF 3 #13 AMER STL & WIRE GA.	FOR FAN BELLMOUTHS			504832
88	60"X48" 6" RC	2				FOR EXH DISH			
89	80"X84" 6" RC	2							
90	6" DIA	1							
91	10" DIA	1							
92	BOLTS, HEX HD.	166		ASTM A-307 GR.B ANSI B18.2.1	REF. 3 SHT. 11	1/4" DIA 20NC-2A 1-1/4" LG.			504880
93		84				3/8" 16NC-2A 1-1/4"			SUPPLY
94	FLAT BAR CLIP	124	STEEL	COMM'L.		NELSON STUD CUP PART NO. 101-084-029			504829
95	MANUAL FIRE DAMPER	1	VARIOUS		REF. 3 SHT 29	10" DIA			*
96		1				5-1/2" DIA			*
97	1/2" WIRE MESH SCREEN TYPE "U"	2	STL GALV.	COMM'L		72"X72" FOR DAMPER			504882
~~98~~	~~1-1/2" HALF COUPLING 3000#~~	~~3~~	~~FORG. CARBON STL~~	~~ASTM A-105~~	~~1-1/2" 3000# (THREADED)~~	~~SEE NOTES~~		~~BONNEY FORGE~~	SUPPLY
99	PIPE SEAMLESS SCH. 40 GALV. 1-1/2"	28 LIN FT	CARBON STL	ASTM A-106 GR. B	SEE NOTES 128, 135, 136 REF. #26				504844
100	WASHERS, FLAT	80	STL. GALV.	COMM'L.	REF. 3 SHT. 11	7/16" I.D. X 1" O.D.			SUPPLY

ALTERATIONS

NO	DATE	ZONE	DESCRIPTIONS	BY	APP'D
2	12/6/77	11/13 4/14	13-AIR DEFLECTORS ADDED TO 60"x48" EXH. SPOOLS ON BOAT DK (P&S) PLAN 11-A. DETS "13-A" & 14-A" ADDED. G.G.S. LTR AUG 15, 1977 # 5587/588.	W/S	G.G. SHARP LTR DATED 2-8-78
		9	14-SPOOL # 20-V-39 & 40 ADDED TO STRUCT. PENETRATION LIST		
		3	15-ITS 7 & 8 ADDED ON L/M.		
		7	16-FR. No CHGD ON 20-V-13 -FR No & DESCRIPTION CHGD. ON 20-V-16		
		4	17-NELSON STUD No CH'GD ON IT. 187 TO 101-08-029.		
		4	18-RESERV. DELETED FROM IT. 193 ON L/M.		
3	[illegible]	5 & 6	TO SUIT ADDITION OF A/C UNIT ON 191-11-2 THIS DWG REVISED: 1-GEN. NOTE # 13 ADDED 2-IT. 203-216 ADDED TO L/M. 3-IT. 70 INCR. 14 TO 80 SQ. FT. 4-IT 195 INCR. 24 TO 31	W.S.	G.G. SHARP LTR. DATED 8-8-78
		7	1-SPOOL 11-V-20 ADDED TO PENETRATION LIST.		
4		10	1-NOTES ADDED ON PLAN "10-B" INDICATING PORTABLE & FIXED LOUVERS.		
		8	2-O.G. DIM. CH'GD. FROM 64" TO 48" OFF ℄ TO CLEAR PORTABLE LOUVER ON "8-A"	WS	9/7/78
		9	3-DELETE SPOOL # 20-V-31-34. THESE SPOOLS ARE SHOWN ON 4650-129-04-14		
		9 & 5	4-IT. 202 ADDED TO L/M.		
5	2/14/79	8 7	1-RELOCATED OPER. STATION LEVERS (STB'D) AT BHD #182. MAIN DK. TO CLEAR LADDER 2-ADDED 3" R.L. TO STRUCT. PENET. #20-V-15	RL	
	[illegible]	7 9 10	3-14"ø VENT REVISED ON PLAN "7-A", "8A", "10-B" & "11-A" - PORT - FR. 173-178	W.S.	
		11	4-14"ø VENT REVISED ON PLAN "11-A" FR. 173-178 STBD.		
	4/4/79	7 9	5-7x12" VENT REVISED ON PLAN "8-A & "10-B" FR 177-178 STBD	F.G	9/27/79
	[illegible]	7 8 9	6-REVISED 5" DIA VENT ON PLAN "7-A" & "8-A" FR. 177-178 (PORT)- ON PENE'N LIST 20-V-36 WAS 18" AFT 166 & X 18"	J.D.	

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	8/26/77		1-UNDER LIST OF MATL'S., ITEM # 18 DIFFUSER QTY. CHANGED FROM 12 TO 13. 2-ADDED ITEM # 19 TO L/M. 3-UNDER L/M, RESERVATION REMOVED FOR ITEMS # 20 THRU # 31. 4-ADDED ITEM # 50. 5-DELETED ITEM # 54. 6-CH'G'D ITEM # 73 FROM 7.65# PL TO # 14 GA. USSG. 7-DELETED ITEM # 74. 8-DELETED ITEM # 98. 9-ITEM # 102, CH'G'D MAT'L. FROM FIBRE-KORK TO IMP'R. FELT. 10-QTY. FOR ITEM # 115 CH'G'D FROM 1 TO 3. 11-QTY. FOR ITEM # 119 CH'G'D FROM 2 TO 3. 12-ADDED ITEM # 121. 13-CH'G'D QTY. & DMP'R. SIZE UNDER ITEM # 141. 14-QTY. FOR ITEM # 142 CH'G'D FROM 5 TO 4. 15-QTY. FOR ITEM # 145 CH'G'D FROM 2 TO 3. 16-QTY. FOR ITEM # 148 CH'G'D FROM 2 TO 1. 17-QTY. FOR ITEM # 149 CH'G'D FROM 1 TO 2. 18-CH'G'D QTY. & DMP'R. SIZE UNDER ITEM # 153. 19-CH'G'D QTY. & DMP'R. SIZE UNDER ITEM # 157. 20-QTY. FOR ITEM # 165 CH'G'D FROM 1 TO 2. 21-ADDED ITEM # 181. 22-ITEM # 183, CH'G'D SIZE OF ANGLE & QTY. 23-ITEM # 184, CH'G'D QTY. OF ANGLE. 24-QTY. FOR ITEM # 186 CH'G'D FROM 1 TO 2. 25-ADDED ITEM # 191 THRU # 198. 26-UNDER LIST OF STRUCTURAL PENETRATIONS, DELETED ITEMS # 20-V-2, 20-V-35 & 20-V-37 THRU 20-V-43.	HMF	G.G. SHARP LTR. DATED 2-8-78
2	12/16/77	7 & 9	PENETRATION LIST CHGS: 1-ADD COLUMN FOR LIST/MAT'L No's 2-DELETE IT. 20-V-26, 27 & 30. 3-ADD IT. 20-V-37 & 38. 4-CHG IT 20-V-3, 5, 13 & 36 FROM PLATE TO STD PIPE AS NOTED.	W.S	
		3-5	LIST OF MATERIAL CHGS: 5-MAT'L & SPEC'S COLUMNS CHG'D ON IT 76-78 TO CORRECT. 6-ADD IT. 52, 74, 199, 200 & 201.		
		ALL	7-NUMERICAL CAPTIONS ADDED TO PRINCIPLE VIEWS.		
		ALL	8-ALL VENTS (P & S) FROM MAIN DK UP TO BOAT DK CHG'D TO SUIT ADDED REF. 20.		
		7	9-PENET. SPLS CHGD FROM R.C. TO F.O. DUCTS-# 20-V-12, 19 & 22 TO SUIT 21 DEPT BOOKLET		
		6	10-G. NOTE 12 ADDED PER U.S.C.G. LTR # 4582 - SEPT. 7, 1977		
		3	11-G.N # 12 ADDED TO REMARKS COLUMN ON IT. 36 OF L/M.		
		9	12-SIZES OF ITS. 23, 24 & 25 CHG'D TO READ OUTSIDE DIMS. ON PENETRATION LIST TO AGREE WITH EQUIPMENT.		

~ CONT'D ~

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/16" = 1'-0"
DATE 7-15-77
DRAWN HMF
APPROVED
TRACED
APPROVED
CHECKED [illegible]
APPROVED [illegible]

PLAN NO. M-4650-191-11-1
ALT. NO. 5

HVAC A/D MACH'Y SPACE
PLAN & L/M

UAO-50103

REFERENCE PLANS

NO.	PLAN NO.	TITLE
26	EF-529	LIST OF SP'L. NOTES FOR VEND.-FURN. MAT'L.
25	4650-129-04-22	MISC. PLENUM BHDS. ABV. MN. DK. FR. 157 AFT
24		
23		
22		
21		
20	-111-27	ARRGT OF PIPING ENG. CASING-MODULE 13
19	-377-1	INSULATION SCHEDULE
18	-129-04-21	MACH'Y. CASING ABV. MN. DK. AFT FR. 157
17	-129-01-35	MISC. BHD. BEL. MN. DK. FR. 157 AFT.
16		VENT FLANGES
15	-177-00-01	WIRE MESH BHDS. LAYOUT & DETAILS
14		FDN. FOR HVAC EQUIPT. - AFT FR. 157
13	-111-2, 3, 4	ARRGT. OF MACH'Y. 2ND DK. & ABOVE
12	-111-3	ARRGT. OF MACH'Y. - SECTIONS
11	-111-4	ARRGT. OF MACH'Y. - ELEV. & SECTIONS
10	-111-2	ARRGT. OF MACH'Y. 36'-0" LEV. & BELOW
9	-235-00-02	WEA. CLOTH & COVERLIST PERM. AWN.
8	-191-13	HVAC A/D MACH'Y. SPACE ELEVATIONS
7	-191-12	HVAC A/D MACH'Y. SPACE SECTIONS
6	-191-8	HVAC AC & SUP. TERM. LIST
5	-191-6	HVAC HTG. & COOLING COIL LIST
4	-191-24-1, 2	HVAC A/D 3RD DK. & BELOW AFT. FR. 182
3	EF-531	STD PLAN A/C & VENT CONST. DET. & L/M
2	-191-5	HVAC FAN LIST
1	-111-21-03	HVAC DIAGRAM MACH'Y SPACE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-15-77				
A.B.S.	╳				
U.S.C.G.					
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				

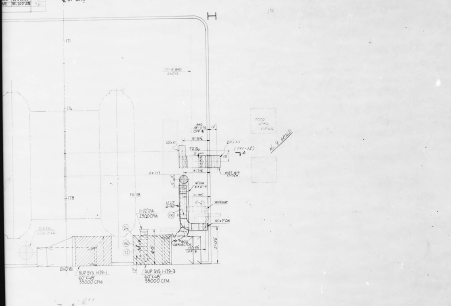
(1) OF 2 DRAWINGS
(PLAN 2ND DK & ABV.)

		DATE OF ISSUE
	ALTERATION	[illegible]
	ENGINEERING DISTRIBUTION	[illegible]
MAIL	OWNERS	
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S. NAVY	
	U.S.C.G.	
	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
OFFICE	HULL DRAFT. - 21	
	MACH. DRAFT. - 22	
	ELEC. DRAFT. - 23	
	OUTFIT. DRAFT. - 25	
	ESTIMATING	
MISC.	PRODUCTION (SCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	
	YARD DISTRIBUTION	
YARD	SHIP SUPT	
	PIECE RATE - 11	
	TEST DEPARTMENT	
	PLANNING	
STRUCTURAL	GROUND ASSEMBLY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL	
	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP - 52	
	OUTFIT. #1 PIER	
	PIPE DRAFT. - 52	
	BOILER SHOP - 58	
	OUTSIDE MACH. - 60	
	ELECTRIC SHOP - 70	
	SHEET MET. SHOP - 74	
	COPPER SHOP - 57	
	PAINT SHOP - 78	
OTHER	WELDING	
	MOLD LOFT - 41	
	BRACKET SHOP	
	TOTAL YARD DIST.	

M-658

GENERAL NOTES

1. FOR ADDITIONAL GENERAL NOTES & TYPICAL DETAILS SEE REF #3
2. DUCTS IN MACHY SPACES SHALL NOT BE LESS THAN #16 USSG THK. SHT. STL.
3.
4. ALL DUCTS PASSING OVER ELECTRICAL EQUIP. SHALL BE MADE WATERTIGHT & LAGGED TO PREVENT CONDENSATION FROM DRIPPING ON ELECT. EQUIP.
5. FOR FAN FDNS. SEE REF #14.
6. WET AIR DISCHARGE DUCT FROM DEHUMIDIFICATION UNIT TO HAVE 1" INSUL. & VAPOR SEAL.
7. HANGERS FOR DUCTWORK SHALL BE SPACED A MAXIMUM OF 8'-0" APART. SEE REF #3, SHT #14 & #15.
8. STOPS ARE TO BE FITTED WHERE NECESSARY TO PREVENT ADJUSTABLE TERMINALS FROM DISCHARGING ON ELECTRICAL EQUIPTMENT.
9. THIS ACCESS PLATE IS FOR INSTALLATION PURPOSES ONLY. WELD INTO PLACE AFTER INSTALLATION OF DUCTWORK.
10. ON ALL DUCTWORK OVER 24" WIDE (18 GA.) ADD 1"x1"x⅛" L EVERY 2'-0" FOR STIFFING PURPOSES.
11. DUCTS INDICATED THUS ▨ SHALL BE INSULATED ½" THICK AND VAPOR-SEALED THE SAME AS AIRCOND DUCTS.
12. ALL INSULATION, LAGGING & SEALER SHALL BE U.S.C.G. APPROVED NON-COMBUSTIBLE MATERIALS.
13. DUCTS INDICATED THUS ▭ SHALL HAVE 1" THICK VAPOR-SEAL INSULATION.



7-A
PLAN VIEW 2ND DECK

LIST OF MATERIAL FOR ONE SHIP.

ITEM	NAME	Q'TY.	MAT'L.	SPEC'S.	DESCRIPTION	REMARKS	VENDORS	REQ #
203	SPIRAL CONDUIT ELL 45°	5	STL GALV.	A526	4½" TYPE E-45-1	#22 USSG. GALV.	UNITED SHEET METAL	504946E
204	90°	4			E-90-1			
205	30°	4			E-30-1			
206	60	2			E-60-1			
207	PIPE	24'-0"						
208	ELL 30°	1			5" TYPE E-30-1			
209	45°	2			E-45-1			
210	90°	3			E-90-1			
211	PIPE	36'-0"						
212	CONICAL TEE	1			5"x4"x4" CON-T-1R			
213	CONDUIT ELL 90°	2			4" TYPE E-90-1			
214	45°	1			E-45-1			
215	PIPE	12'-0"						
216	CAULKING COMPOUND	2	—		5 GAL. CANS	D-362 TYPE #1 FARR PAINT CO. CLEVELAND OHIO		504946E
217								
218								
219								

LIST OF MATERIALS FOR ONE SHIP

ITEM	NAME	QTY	MATL.	SPECS.	DESCRIPTION	REMARKS	WT	REMARKS	REQ'N NO.
101	3/8" HEX HD BOLTS, AM STD, FINISH	280	STL GALV	ASTM A-307 GR.B ANSI B18.2	REF 3 SHT #23 16NC-2.58" LG	BOLTED ACC. PTS			504830
102	GASKET 1/8" THK	525 SQ FT	IMP'R. FELT			& FLG'S		CHROMELOCK	504824
103	HEX NUTS ASH SEMI-FIN.	166	STL. GALV.	ASTM A-307 ANSI B18.2	REF 3 SHT. 11	1/4" DIA. 20NC-2B			504830
104		80				3/8" 16NC-2B			SUPPLY
105	BALANCING DMPR TYPE III	1	VARIOUS		REF 3 SHT #30	28" X 7-1/2"			*
106	II	1			29	14-1/2"X6" SPLITTER TYPE			*
107	TYPE III	3			SHT. #30	13" DIA.			*
108	I	1			28	5-1/2" DIA			*
109	TYPE II	1			SHT. #29	27"X15-1/2"			*
110		1			DET. "E"	10"X20" SPLITTER TYPE			*
111		1				6"X20"			*
112		1				6"X28"			*
113		1				6"X28"			*
114		3				10"X16"			*
115		3				8"X15"			*
116		1				7"X15"			*
117		1				6"X12"			*
118	TYPE I	5			SHT. #28	12" DIA			*
119	TYPE II	3			SHT. #29	15"X15"			*
120	I	1			28	11"X12"			*
121	II	1				12½"x16"			*
122	III	1			30	20"X8-1/2"			*
123	STUFFING BOX	1	VARIOUS	COMM'L	SIZE 1/2" BROOKS SB SS-37	FOR OPER GEAR			504876
124	ROD	LF	STEEL		1/2" DIA				
125	UNIVERSAL JOINT	2	STEEL	COMM'L	1/2" DIA BORE			CURTIS CAT.# C-645-B	504860
126	HANGER	2	STEEL		FOR 1/2" DIA ROD BROOKS			TYPE SHS	504876
127	BALANCING DAMPER TYPE II	1	VARIOUS		REF. 3 SHT. 29	16" x 16"			*
128	FLAT BAR 1-1/4"X3/8"	3 LF	STL GALV	ABS-GRA		FOR OPER GEAR			CUTTINGS
129	1/2" W.M SCREEN 12"X7"	1	STL GALV	COMM'L	REF #3 #13 AMERICAN STL (WIRE GA	FOR EXH DISCHARGE			504932
130	2"X3/4" CHANNEL	12 LF		ABS-GRA		FIRE DAMPER			
131	SCREW MACH. RD HD	38	STL GALV	COMM'L	#10-24 UNC X 7/8" LG	FOR DAMPER SCREEN			504830 A
132	NUT HEX	38			#10-24 UNC ANSI B1.1				
133	1/4" HEX HD A.S. BOLT	5502	STL GALV	ASTM A-307 GR.B ANSI B18.2	REF. 3 SHT. #10	1/4" DIA -20NC-2A ~ 3/4" LG.			504830
134	A.S.H. SEMI-FIN NUT	5502		ASTM A-104 GR.1 ANSI B18.2		B			
135	3/8" A.S. BOLT	1040		ASTM A-307 GR.B ASA B18.2		3/8" 16 A ~ 1" LG.			SUPPLY
136	A.S.H. SEMI-FIN NUT	1044		ASTM A-104 GR.1 ASA B18.2.1		B			
137	WASHERS 7/16" I.D. TO 1" O.D.	890		COMM'L					
138	BALANCING DMPR TYPE I	1	VARIOUS		REF 3 SHT #28	8"X4"			*
139		1			REF 3 SHT. #28	5" DIA.			*
140		1				8"			*
141	II	2			29	11¼" x 12"			*
142	I	4			28	11-1/2" DIA.			*
143	II	1			29	13-1/2"			*
144	III	4			30	14"			*
145	I	3			28	12"X10"			*
146	III	1			30	13"X12"			*
147		1				10"X13-1/2"			*
148		1				14"X8"			*
149		2				14"X10"			*
150		1				14"X11"			*
151		1				14-1/2"X10"			*
152		1				15"X7"			*
153		4				18" x 7½"			*
154		1				15"X12-1/2"			*
155		1				16"X8"			*
156		1				17"X9"			*
157		1				20" x 7½"			*
158		1				22-1/2"X7-1/2"			*
159	II	1			29	32"X13-1/4"			*
160		1				45"X13-1/2"			*
161		1			DET. "E"	6"X12-1/2" SPLITTER TYPE			*
162	III	1			30	14"X12"			*
163	II	1			29 DET. "E"	6"X15" SPLITTER TYPE			*
164		2				6"X16"			*
165		2				6"X21"			*
166		1				7"X8"			*
167		1				9"X15-1/2"			*
168		1				6"X16"			*
169		1				10-1/2"X20"			*
170		1				10"X15-1/2"			*
171	FLAT BAR 1"X1/8"	126 L.F.	STL. GALV.	ABS GR B	REF. 3 SHT. 11	FOR HGR'S.			*
172	1"X1/4"	410 L.F.							*
173	1"X3/8"	143 L.F.							*
174	HINGED PLATE, ACCESS DR. 24"X24"	3	VARIOUS		22			CUT FROM IT. 73	*
175	MOUNTING BRACKET	15	MALL. IRON	COMM'L.	SIZE 1" SB-3A ITT MENZE	FOR OPER GEAR			504860-A
176	ANGLE 2"X2"X3/8"	4 L.F.	STL GALV	ABS-GRA		HANGERS			*
177	FLAT BAR 2"X1/2"	4	STEEL			HANDLES			*
178	UNIT HEATER, ELECTRIC	2	VARIOUS		REF. 5, ITEM 78 & 79	TYPE UB		ORD. BY 23 DEPT.	—
179	BALANCING DAMPER TYPE II	1	VARIOUS		REF. 3 SHT. 29	15" x 11½"			*
180	ACCESS PLATES	1	VARIOUS		REF. 3, SHT. 23	DETAIL "G-A"		CUT FROM IT. 71	*
181	BALANCING DAMPER TYPE II	1	VARIOUS		REF. 3, SHT. 29	8"x18" SPLITTER TYPE			
182	BALANCING DMPR TYPE II	1	VARIOUS		REF. 3 SHT. 29	6"X14-1/2" SPLTR. TYPE			*
183	ANGLE 2"x2"x¼"x20' LONG	5	STL. GALV.	ABS-GRA	REF. 3 SHT. 11	FOR HGR'S			*
184	1"x1"x⅛"x20' LONG	200	STL. GALV.			FOR DUCT STIFFENER			*
185	BALANCING DMPR. TYPE II	1	VARIOUS		REF. 3 SHT. 29	12"X6-1/2" SPLITTER TYPE			*
186	III	2				12¼"X10"			*
187	FLATBAR CLIP	4	STEEL	COMML.	REF. 3 SHT. 11	NELSON STD #101-084-029			504829
188	COLLAR PLATE	5	SHT STL GALV	A525	REF. 3 SHT. 7	MADE FROM PC. NO. 70			*
189	BALANCING DMPR TYPE II	1	VARIOUS		REF. 3 SHT. 2	14-1/2 X 20			*
190	GASKET	60 L.F.	IMPREGNATED FELT		1/8" THICK x 1½" WIDE			CHROMELOCK	504824
191	ANGLE 1½"x1½"x3/16"x20' LONG	100	STL. GALV.		REF. 3 SHT. 11	FOR FLANGES			* 5/6
192	FLAT BAR 2"x¼"x20' LONG	5				FOR HANGERS			*
193	MECHANICAL SEAMLESS TUBING #11 GA.	7	STEEL		A519 GR. 1020 H.F.	5" DIA.		20' LENGTHS	504844-W
194	DAMPER REGULATOR	40	CAD. PLT. STL.		REF. 3 SHT 28-31 BALANCE DAMP.			MARSTO MACH. CO. MOD. 13L	504837-M
195		31						13	[illegible]
196		6	BRASS		FIRE	SHAFT 4" LONG		13M	504859-M
197		2						24B	
198	DEFLECTOR PLATE REGULATOR	26	CAD. PLT. STL.		SPLIT	ROD 30" LONG			
199	5" I.P.S. PIPE SPOOLS	12" LG	STEEL	A53 GR B	SCH. 40 PIPE				CUTTINGS
200	8"	6" LG							
201	10"	6" LG							SUPPLY
202	1/2" A.S.H. HEX BOLT W/A.S.H. NUT S.F	36	STL GALV.	A307 GR. B ANSI B18.2.1/2	1/2" DIA. - 13 NC 2A/2B 1 1/4" LG				

ITEM	NAME
1	AXIAL FLOWFAN
2	
3	
4	
5	
6	FAN BELLMOUTH 54"
7	1/2" HALF - COUPLING - SCR'D.
8	1/2" PIPE PLUG - SCR'D.
9	FAN BELLMOUTH 48-1/4
10	MANUAL FIRE DAMPER
11	
12	
13	FLEX CONNECTIONS 54"
14	
15	LOUVER 4'-6" W X 10'-0" H
16	LOUVER 4'-6" W X 10'-0" H
17	20"X12" F.O.
18	VENT DIFFUSER
19	BALANCING DAMPER TYPE
20	TYPE "E" TERMINAL 6"
21	8"
22	10-1/2"
23	11"
24	11-1/2"
25	12"
26	12-1/2"
27	13"
28	13-1/2"
29	14"
30	14-1/2"
31	15"
32	TYPE "J" EXHTERM 5" DIA.-8-3/4" DIA
33	TYPE "J" SUPTERM 5" DIA.-8-3/4" DIA
34	UNIVERSAL JOINT
35	STANDARD PIPE 1-1/4" DIA.
36	INSULATION 1/2" VAPOR SEAL
37	DETENT PIN ASS'Y
38	CHAIN
39	TAPER PIN #2 X 1-3/4"
40	STUFFING BOX
41	ROD
42	HINGED JOINT, CONSOLIDATED
43	COUPLING
44	COAMING 15.3" R
45	15.3
46	30.6
47	15.3
48	15.3
49	30.6
50	BALANCING DAMPER TYPE I
51	
52	DEFLECTOR 7.65" R
53	SPOOLS 15.3" R
~~54~~	~~30.6" R~~
55	10.2"
56	
57	
58	
59	15.3"
60	10.2"
61	
62	10.2"
63	10GA.
64	
65	10.2"
66	15.3"
67	12.8"
68	
69	7.65"
70	SHEET STEEL 20 USSG
71	SHEET STEEL 16 USSG
72	10 USSG
73	(48"x120") 14 USSG
74	PLATE STEEL 10.2" R
75	15.3" R
76	30.6" R
77	12.8" R
78	SHEET #18 USSG
79	SPOOLS 20.4" R
80	20.4" R
81	15.3" R
82	15.3" R
83	15.3" R
84	LASHING HOOKS 3/8" DIA.
85	BALANCING DAMPER TYPE II
86	
87	1/2" WM SCREEN 66-1/4" DIA.
88	60"X48"6"
89	80"X84"6"
90	6" DIA
91	10" DIA
92	BOLTS, HEX HD.
93	
94	FLAT BAR CLIP
95	MANUAL FIRE DAMPER
96	
97	1/2" WIRE MESH SCREEN TYPE "U"
~~98~~	~~1-1/2" HALF COUPLING 3000#~~
99	PIPE SEAMLESS SCH. 40 GALV. 1-1/2
100	WASHERS, FLAT

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4461
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-11-1

FRAME 2 OF 5

LIST OF STRUCTURAL PENETRATIONS

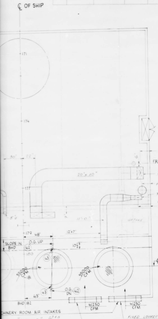
COAM ITEM NO.	LOCATION			COAMING				STRUCTURE PENETRATED	DECK	ITEM
	FRAME	DISTANCE OFF ℄	HEIGHT	SIZE	R.C.	MATERIAL	LGTH			
20-V-23	AT FR.181	3'-9" OFF ℄ (P)	–	60"x48" O.A.	RECT	12.8# R	6"	DK.	MAIN	77
20-V-24	AT FR.181	11'-8" OFF ℄ (P)	–		RECT	12.8# R	6"	DK.	MAIN	
20-V-25	AT FR.181	12'-2" OFF ℄ (S)	–	↓	RECT	12.8# R	6"	DK.	MAIN	↓
20-V-26	6" FWD FR.178	4'-9-1/2" OFF ℄ (P)	X = 36" (F)	5" DIA.	–	10.2# R	6"	BHD	BOAT	74
20-V-27	6" FWD FR.178	3'-6" OFF ℄ (S)	X = 36"	15" DIA.	–	10.2# R	6"	BHD	BOAT	↓
20-V-28	36" AFT FR.182	25'-9" OFF ℄ (P)	—	80"X84"	6	15.3# R	7"	BHD	BOAT	75
20-V-29	6" FWD.FR.180	4'-0" OFF ℄ (S)	X=69"	72"X72"	RECT.	15.3# R	7"	BHD	BOAT	↓
20-V-30	16" AFT FR.176	20'-0" OFF ℄ (S)	X=8"	20"X10"	FO	45.9# R	4"	GIRDER	36' FLAT	
20-V-31	ON FR 182	13'-9" OFF ℄ (S)	7'-6" ABV MN DK	10'-0"X54"	6"	10.2# R	8"	BHD	MAIN	74
20-V-32	ON FR 182	8'-3" OFF ℄ (S)	7'-6" ABV MN DK	10'-0"X54"	6"	10.2# R	8"	BHD	MAIN	
20-V-33	ON FR 182	8'-3" OFF ℄ (P)	7'-6" ABV MN DK	10'-0"X54"	6"	10.2# R	8"	BHD	MAIN	
20-V-34	ON FR 182	13'-9" OFF ℄ (P)	7'-6" ABV MN DK	10'-0"X54"	6"	10.2# R	8"	BHD	MAIN	↓
~~20-V-35~~	~~3" AFT FR 179~~	~~36'-[illegible] OFF ℄ (S)~~	~~APPROX [illegible]~~	~~18-1/2"X12-3/4"~~	~~–~~	~~—~~	~~–~~	~~BHD~~	~~26'-0" LEVEL~~	
20-V-36	27-1/2" AFT FR 167	35'-3-1/2" OFF ℄ (P)	X=19"	5" DIA.	–	SCH. 40 PIPE	6"	GIRDER	36'-0" LEVEL	199
20-V-37	18" FWD FR 181	25'-5" OFF ℄ (S)	X = 45"	32" x 38"	3"	10.2# R	3"	BHD	26'-0" LVL	74
20-V-38	3" AFT FR 179	36'-7-1/2" OFF ℄ (S)	X = 19"	18" x 12"	3"	10.2# R	6"	BHD	26'-0" LVL	74
20-V-39	18" AFT FR 176	20'-0" OFF ℄ (S)	12" ABV. 2nd DK	20" x 10"	2"		4"	CASING	2nd DK	
20-V-40	↓	21'-0" OFF ℄ (S)	~	↓	↓	↓	↓	2nd DK	↓	↓

LIST OF STRUCTURAL PENETRATIONS

COAM ITEM NO.	FRAME	DISTANCE OFF ℄	HEIGHT	SIZE	R.C.	MATERIAL	LGTH	STRUCTURE PENETRATED	DECK	ITEM
20-V-1	6" FWD FR.180	4'-0" OFF ℄ (P)	X=69"	72"X72"	RECT	15.3# R	7"	BHD	BOAT	75
~~20-V-2~~	~~[illegible]~~	~~ON ℄~~	~~[illegible]~~	~~42"X8"~~	~~F.O.~~	~~30.6# R~~	~~6"~~	~~BEAM~~	~~36' LEVEL~~	
20-V-3	18" AFT FR.166	43'-1" OFF ℄ (P)	–	5" DIA.	–	SCH.40 PIPE	6"	DECK	36' LEVEL	199
20-V-4	ON FR 177	34'-4-1/2" OFF ℄ (P)	X=8"	15"X7"	F.O.	10.2# R	6"	WEB FRAME		74
20-V-5	ON FR.174	41'-5" OFF ℄ (P)	X=23"	8" DIA.	–	SCH 40 PIPE	6"	WEB FRAME		200
20-V-6	24" AFT FR 170	41'-6" OFF ℄ (S)	—	15" DIA	–	10.2# R	6"	DECK		74
20-V-7	ON FR.170	41'-6" OFF ℄ (S)	X=26"	15" DIA.	–	15.3# R	6"	TRANS GIRDER		75
20-V-8	18" AFT.FR.167	42'-6" OFF ℄ (S)	—	12"X16-1/2"	3	10.2# R	6"	DECK	↓	74
20-V-9	ON FR.170	39'-0" OFF ℄ (P)	X=24"	11" DIA.	–	10.2# R	6"	BHD	26' LEVEL	↓
20-V-10	17" AFT FR.179	24'-8" OFF ℄ (S)	X=36"	5-1/2" DIA.	–	5.1# R	6"	BHD	↓	72
20-V-11	ON FR. 160	21'-0" OFF ℄ (P)	X=13"	16" x 8"	1"	10.2# R	3	BHD	36' LEVEL	74
20-V-12	ON FR. 165	31'-10-3/4" OFF ℄ (S)	X=9"	15"X9"	F.O.	10.2# R	6"	TRANS GIRDER		74
20-V-13	18" FWD FR 181	38'-5" OFF ℄ (S)	—	10" DIA	–	SCH.40 PIPE	6"	DECK	26' LEVEL	201
20-V-14	6" AFT FR 182	17'-0" OFF ℄ (P)	X=48"	60"X48"	6"	15.3# R	6"	PLEN BHD	BOAT	75
20-V-15	6" FWD FR.180	3'-6" OFF ℄ (S)	X=18"	20"X10"	3"	7.65# R	6"	PLEN BHD	BOAT	52
20-V-16	7-1/2" FWD FR 181	36'-7-1/2" OFF ℄ (S)	DET. 9-A	20"X15"	3"	15.3# R. 3 SIDES	4"	DECK	36' LEVEL	75
20-V-17	36" AFT FR 182	APPROX 25'-6" OFF ℄ (S)	X=66"	80"X84"	6"	15.3# R	7"	PLEN BHD	BOAT	
20-V-18	6" AFT FR 182	19'-6" OFF ℄ (S)	X=48"	60"X48"	6"	15.3# R	7"	PLEN BHD	BOAT	↓
20-V-19	ON FR.174	26'-6" OFF ℄ (S)	X=36"	33"X20"	F.O.	30.6# R	6"	WEB FRAME	BEL. 26'0" LEVEL	76
20-V-20	ON FR.182	1'-3" OFF ℄ (S)	X=24"	20"X12"	FO	10.2# R	8"	BHD	BOAT	74
20-V-21	ON FR 174	41'-6" OFF ℄ (S)	X=34-1/2"	16"X32-1/2"	F.O.	15.3# R	6"	WEB FRAME	36'-0" LEVEL	75
20-V-22	ON FR. 174	26'-6" OFF ℄ (P)	X=36-3/4"	30"X25"	F.O.	30.6# R	6"	WEB FRAME	BEL. 26'0" LEVEL	76

CONT. IN PANEL #9

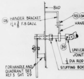
191-11-2


℄ OF SHIP
171
174
177
179
180
181
20"x10"
20"X10"
FR.176
16"
14"
7 x 12
20 1/2"
12"x7"
11'-0"
UPTAKE
48"
SLOPE IN BHD
O.G. UP
10 1/2"
55000 CFM
O.G. DN
43"
BHD 182
41250 CFM
℄ OF FANS
FIXED LOUVER
PORTABLE LOUVER "10-A" & "12-A" REF. 7 CUTS & C'W'S. SHOWN ON 4650-159-04-14
42
43

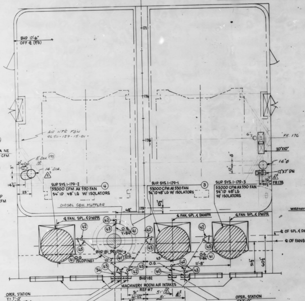
CHINERY ROOM AIR INTAKES

"10-B"

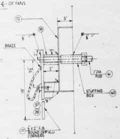
N VIEW UPPER DECK


BHD
HANGER BRACKET 1 1/4 x 3/8 F.B. GALV.
HANGER
UNIVERSAL JOINT
1/2 DIA ROD
STUFFING BOX
FOR HANDLE AND QUADRANT SEE REF 3 SHT 29
128
93
136
126
39
125
124
123

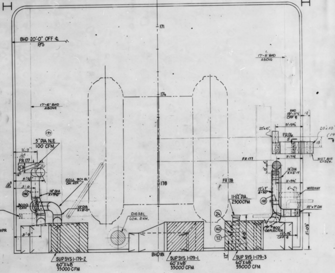
DETAIL 9-B
SCALE: NONE


℄ OF SHIP
BHD 17'-6" OFF ℄ (P/S)
AIR HTR FDN 4650-129-15-01
5"DIA NE 100 CFM
5" DIA.
14" DIA.
14"DIA UP 3000 CFM
14 1/4"
25"
174
176
179
FR. 176
20"X10"
14"Ø
12"X7" DN
FR178
SUP. SYS. 1-179-2 55000 CFM AX 550 FAN 54" ID 48" LG W/ ISOLATORS
SUP. SYS. 1-179-1 55000 CFM AX 550 FAN 54" ID 48" LG W/ ISOLATORS
SUP. SYS. 1-179-3 55000 CFM AX 550 FAN 54" ID 48" LG W/ ISOLATORS
DIESEL GEN. MUFFLER
48"
℄ FAN, SPL. ℄ DMPR
℄ OF SPL. ℄ DMPR
℄ OF FANS
O.G. Y=84
O.G. (SLOPING)
BHD 181 BELOW
12'-2"
11'-8"
45"
51 1/2"
60 1/2"
BHD 182
MACHINERY ROOM AIR INTAKES REF #7
31"
41-1/2"
52"
51"
OPER. STATION Y=7'-0" SEE DET. 10-A
OPER. STATION Y=5'-4" SEE DET. 10-A
OPER. STATION Y=7'-0" SEE DET. 10-A
OPER. STATION Y=7'-0" SEE DET. 10-A
3
4
34
40
41
42
43

PLAN VIEW MAIN DECK
"8-A"


℄ OF FANS
3"
2"
5 1/2"
18"
BRAZE
1" DIA ROD
STUFFING BOX
1/2" X 2" F.B. ROUND OFF ALU CORNERS
72
35
41
40
37
38
177

DETAIL 9-A
SCALE: 3" = 1'-0"


℄ OF SHIP
BHD 20'-0" OFF ℄ P/S
17'-6" BHD ABOVE
171
174
178
5" DIA N.E 100 CFM
FR 177
3'-9"
3'-0
14" DIA X=7'-0"
FOLL 90° EL DN. 45°
13" DIA X=8'-0"
3000 CFM
WIREWAY
DIESEL GEN. EXH.
FR 178
11-1/2" DIA. 2500 CFM
BHD 19'-11 1/2" OFF ℄
20"x10"
FR176
(191-12
WET AIR DISCH.
14" DIA X=6'-9"
12"x7" DN
90° DEFLECTOR
10'-1 1/2" OFF ℄
5'-0 1/2"
BHD181
SUP SYS 1-179-2 60"X48" 55000 CFM
SUP SYS 1-179-1 60"X48" 55000 CFM
SUP SYS 1-179-3 60"X48" 55000 CFM
193
24
142
72

"7-A"
PLAN VIEW 2ND DECK

LIST OF MATE

ITEM	NAME	Q'TY.	MAT'L.	SPEC'S.	D
203	SPIRAL CONDUIT ELL 45°	5	STL GALV.	A526	4 1/2" T
204	90°	4			
205	30°	4			
206	60	2			
207	PIPE	84'-0"			
208	ELL 30°	1			5" D
209	45°	2			
210	90°	3			
211	PIPE	36'-0"			
212	CONICAL TEE	1			5"x4"
213	CONDUIT ELL 90°	2			4" T
214	45°	1			
215	PIPE	12'-0"			
216	CAULKING COMPOUND	2	—		5 GAL
217					
218					
219					

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-11-1

FRAME 3 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

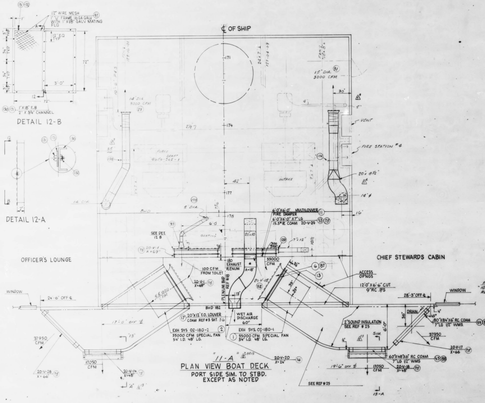
NOV 1980 10X

BUILDERS PLAN NO. M4650-191-11-1

FRAME 4 OF 5

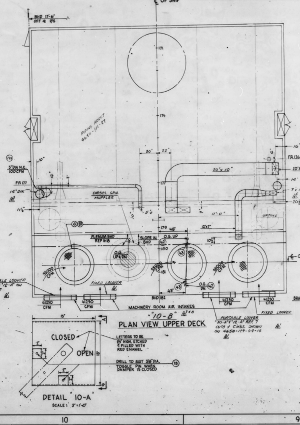
LIST OF STRUCTURAL PENETRATIONS

COAM ITEM NO.	LOCATION			COAMING				STRUCTUR PENETRATI
	FRAME	DISTANCE OFF ℄	HEIGHT	SIZE	R C	MATERIAL	LG'TH	
20-V-23	AT FR. 181	3'-9" OFF ℄ (P)	–	60 x 48 O.A.	RECT	12.8# ℞	6"	DK.
20-V-24	AT FR. 181	11'-8" OFF ℄ (P)	–		RECT	12.8# ℞	6"	DK.
20-V-25	AT FR. 181	12'-2" OFF ℄ (S)	–		RECT	12.8# ℞	6"	DK.
20-V-26	6" FWD FR. 178	4'-9-1/2" OFF ℄ (P)	X = 36" (F)	5" DIA.	–	10.2# ℞	6"	BHD
20-V-27	6" FWD FR. 178	3'-6" OFF ℄ (S)	X = 36"	15" DIA.	–	10.2# ℞	6"	BHD
20-V-28	36" AFT FR. 182	25'-9" OFF ℄ (P)	–	80"X84"	6	15.3# ℞	7"	BHD
20-V-29	6" FWD. FR. 180	4'-0" OFF ℄ (S)	X = 69"	72"X72"	RECT.	15.3# ℞	7"	BHD
20-V-30	16" AFT FR. 176	20'-0" OFF ℄ (S)	X = 8"	20"X10"	FO	45.9# ℞	4"	GIRDER
20-V-31	ON FR 182	13'-9" OFF ℄ (S)	7'-6" ABV MN DK	10'-0"X54"	6"	10.2# ℞	8"	BHD
20-V-32	ON FR 182	8'-3" OFF ℄ (S)	7'-6" ABV MN DK	10'-0"X54"	6"	10.2# ℞	8"	BHD
20-V-33	ON FR 182	8'-3" OFF ℄ (P)	7'-6" ABV MN DK	10'-0"X54"	6"	10.2# ℞	8"	BHD
20-V-34	ON FR 182	13'-9" OFF ℄ (P)	7'-6" ABV MN DK	10'-0"X54"	6"	10.2# ℞	8"	BHD
~~20-V-35~~	~~3" AFT FR 179~~	~~36'-7 1/2" OFF ℄ (S)~~	~~APPROX X=[illegible]~~	~~18-1/2"X17-3/4"~~	~~–~~	~~–~~	~~–~~	~~BHD~~
20-V-36	27 1/2" AFT FR 167	35'-3 1/2" OFF ℄ (P)	X = 19"	5" DIA.	–	SCH. 40 PIPE	6"	GIRDER
20-V-37	18" FWD FR 181	25'-5" OFF ℄ (S)	X = 45"	32" x 38"	3"	10.2# ℞	3"	BHD
20-V-38	3" AFT FR. 179	36'-7 1/2" OFF ℄ (S)	X = 19"	18" x 12"	3"	10.2# ℞	6"	BHD
20-V-39	18" AFT FR. 176	20'-0" OFF ℄ (S)	12" ABV. 2ND DK	20" x 10"	2"		4"	CASING
20-V-40		21'-0 OFF ℄ (S)	~					2ND DK


12
11
½" WIRE MESH
FRAME 16 GA GALV WITH 1" X 1/8" GALV MATING FLG
1'-0" EQ TYP
72"
3'-0"
1" X 1/8" F.B.
2" X 3/4" CHANNEL
DETAIL 12-B
DETAIL 12-A
℄ OF SHIP
171
174
177
178
180
15" DIA. 3000 CFM
14 DIA. 5000 CFM
30"
VENT
FIRE STATION #4
20" Ø 1/2"
14" Ø
16"
42"
5 DIA.
6'-0
SEE DET. 12 B
20-V-1 X=69"
6'-0"X6'-0" MULTILOUVER FIRE DAMPER
6'-0"X6'-0" X7" LG 15.3# ℞ COAM 20-V-29
55000 CFM
100 CFM FROM TOILET
EXHAUST PLENUM
PLENUM BHD REF #18
A=18"
20-V-15
OFFICER'S LOUNGE
CHIEF STEWARDS CABIN
ACCESS OPNGS
12'-0"X6'-6" CUT 9" RC P/S
WINDOW
24'-6" OFF ℄
26'-3" OFF ℄
BHD 182
55000 CFM
20"X12" F.O. LOUVER COAM REF #3 SHT. 56
WET AIR DISCHARGE 60"
EXH SYS 02-180-2 55000 CFM SPECIAL FAN 54" I.D. 48" LG.
EXH SYS 02-180-1 55000 CFM SPECIAL FAN 54" I.D. 48" LG.
17'-0" OFF ℄
2" SOUND INSULATION SEE REF # 25
DRAIN
80"X84"X6" RC COAM 7" LG 1/2" WMS
60"X48"X6" RC COAM 7" LG 1/2" WMS
37950 CFM
20-V-17 X=66
37950 CFM
17050 CFM
20-V-28 X=66"
20-V-14 X=48"
20-V-20 X=24"
20-V-18 X=48
19'-6" OFF ℄
17050 CFM
SEE REF # 25
13-A

"11-A"

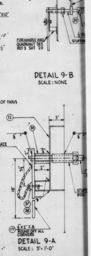
PLAN VIEW BOAT DECK
PORT SIDE SIM. TO STBD.
EXCEPT AS NOTED


10
℄ OF SHIP
BHD 17'-6" OFF ℄ P/S
171
174
177
PIPING ARRGT 4650-111-27
5" DIA N.E. 100 CFM
FR 177
14" DIA.
DIESEL GEN. MUFFLER
30"
22"
16"
FR 176
20"x10"
20"X10"
14"
7"x12"
20 1/2"
11'-0"
12'-7"
179
48"
PLENUM BHD REF #18
SLOPE IN BHD
O.G. UP
O.G. UP/DN
UPTAKE
160
181
55000 CFM
55000 CFM
55000 CFM
45"
O.G. DN
℄ OF FANS
PORTABLE LOUVER "10-A" & "12-A" ON REF #7
FIXED LOUVER
41250 CFM
41250 CFM
41250 CFM
41250 CFM
BHD 182
MACHINERY ROOM AIR INTAKES
PORTABLE LOUVER "10-A" & "12-A" REF. 7 CUTS & CMS. SHOWN ON 4650-171-09-14
FIXED LOUVER
15"
CLOSED
OPEN
LETTERS TO BE 1/4" HIGH, ETCHED & FILLED WITH RED ENAMEL
DRILL TO SUIT 3/8" DIA. TOGGLE PIN WHEN DAMPER IS CLOSED

"10-B"

PLAN VIEW UPPER DECK

DETAIL "10-A"
SCALE: 3"=1'-0"


9
BHD
HANGER BRACKET 1 1/2" X 1/8" F.B. GALV.
FOR HANDLE AND QUADRANT SET REF 3 SHT 29
STUFFING
3"
BRAZE
STUFF BOX
1" X 2" F.B. ROUND OFF ALL CORNERS

DETAIL 9-B
SCALE: NONE

DETAIL 9-A
SCALE: 3"=1'-0"

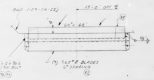
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

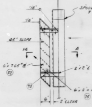
BUILDERS PLAN NO. M4650-191-11-1

FRAME 5 OF 5

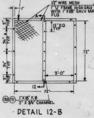
PLENUM
41250 CFM
OPEN
10-A"


BHD. (129-04-22)
17'-0" OFF ℄
60"x 48"
75
1/8"
2"x 2"x 3/8 L W/ 3/8 BOLT
176 93
(7) 7.65# ℔ BLADES 6" SPACING
52

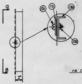
"14-A" 13
1"=1'-0"


BHD
1/8"
1/8"
SPOOL 20-V-14 7" LG 75
45° SLOPE
14
A
6"x 7.65# ℔
52
2"x 2" L 176
93
6"x 2"x 15.3# ℔
75
6"
2" CLEAR

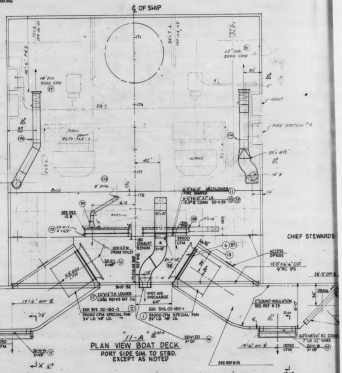
"13-A" 13
AIR DEFLECTOR
1"=1'-0"


131 132
1/2" WIRE MESH
1" "U" FRAME 16 GA GALV WITH 1"X1/8" GALV MATING FLG 97
1"
A
12" EQ TYP
3" TYP
34" TYP
72"
3'-0"
12
72"
130 171 1"X1/8" F.B 2" X 3/4" CHANNEL

DETAIL 12-B


12
131 171 130
132
B
2"

DETAIL 12-A


℄ OF SHIP
FDN 7 129-16-01
10'-6" P&S
24"x 7 L 129-04-09
FDN 7 10x 8 L
171
174
177
178
14" DIA 3000 CFM 29
15" DIA. 3000 CFM 91
30"
5"
VENT
FIRE STATION #4
2 1/2 7
35"
194
FORCE DRAFT 4650-362-1
INTAKE
20"x 8 1/2"
14" ⌀
42"
14" DIA.
193
5" DIA.
7 1/2
BHD
16"
6'-0"X6'-0" MULTILOUVER FIRE DAMPER 11
6'-0"X6'-0" X7" LG 15.3# ℔ COAM 20-V-29 53 75
6'-0
SEE DET. 12 B
35
GRATING
20"x10
129
7"x 12"
10 1/2
75 20-V-1 X=69"
OFFICER'S LOUNGE
CHIEF STEWARDS
180 EXHAUST PLENUM
55000 CFM
6 87
13
100 CFM FROM TOILET
20-V-1 X=69" 75
A=18"
20-V-15 52
PLENUM BHD REF #18
ACCESS OPNGS
12'-0"X6'-6" CUT 9" RC P/S
55,000 CFM
39"
33"
WINDOW
24'-6" OFF ℄
28'-3" OFF ℄
BHD 182
WET AIR DISCHARGE 60"
17 20"x12" F.O. LOUVER COAM REF #3 SHT. 36
DRAIN
36"
6'-0"
17'-0" OFF ℄
"13"
EXH SYS 02-180-2 2 55000 CFM SPECIAL FAN 54" I.D. 48" LG.
EXH SYS 02-180-1 1 55000 CFM SPECIAL FAN 54" I.D. 48" LG.
2" SOUND INSULATION SEE REF #25
SIM.
37950 CFM
17050 CFM
20-V-28 X=66" 75
20-V-14 X=48" 75
20-V-20 X=24" 74
60"X48"X6" RC COAM 7" LG 1/2" WMS
19'-6" OFF ℄
17050 CFM
20-V-18 X=48" 75
SEE REF #25
"A" 13
13-A

"11-A"

PLAN VIEW BOAT DECK
PORT SIDE SIM. TO STBD.
EXCEPT AS NOTED

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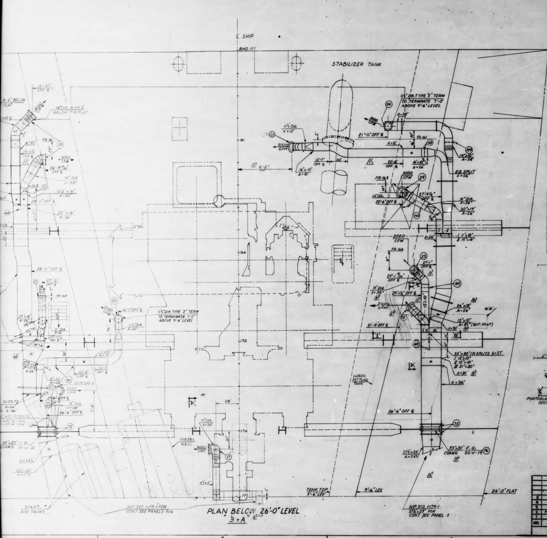
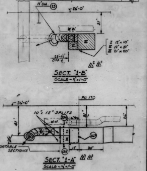
BUILDERS PLAN NO. M4650-191-11-2

FRAME 1 OF 4


3
2
℄ SHIP
BHD 157
STABILIZER TANK
11½" DIA TYPE "E" TERM TO TERMINATE 7'-0" ABOVE 9'-6" LEVEL
11½" DIA TYPE "E" TERM TO TERMINATE 7'-0" ABOVE 9'-6" LEVEL
2000 CFM
3000 CFM
FR 161
FR 163
FR 166
21'-0" OFF ℄
22'-6" OFF ℄
24'-1½" OFF ℄
25'-1½" OFF ℄
21'-10 OFF ℄
26'-6" OFF ℄
28'-5" OFF ℄
14"x10" A=26"
20"x14" A=26"
26"x18"
12"x10" A=81" (BOT. VENT)
33"x20" (3) SPLITS A=27
I 12"x10"
II 12"x10"
III 21"x20"
14" DIA X=34"
11" DIA X=35"
W.W.
LUBOIL SETTLING TANK
DIESEL GEN.
30"x25" F.O. COAMG 20-V-22
33"x20" F.O. COAMG 20-V-19
27½"x23" A=24½
TANK TOP 3'-6" LEV
9'-6" LEV
26'-0" FLAT
START AIR TANKS
SUP SYS 1-179-1 FOR CONT SEE PANELS 5&6
SUP SYS 1-179-1 27½"x23" FOR CONT. SEE PANEL 5
166
170
174
177
24
29
23
72
76
145
149

PLAN BELOW 26'-0" LEVEL
"3-A"


11" DIA.
23
26'-0"
31"
W.W.
I 12"x10"
II 12"x10"
III 21"x20"
26'-0"
FR 170
10"x 12" SPLITS
PORTABLE SECTIONS
30"

SECT. "1-B"
SCALE - ½"=1'-0"

SECT. "1-A"
SCALE - ½"=1'-0"

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTIONS	MADE	APP'D
3	6/13/78	11	1-PLAN "11-A" REVISED TO SUIT REQUEST BY G.G.S. LTR FEB. 8, 1978 5587/338 FOR MORE AIR ON 36'-0 LVL (P) FR. 159-161	W.S.	G.G. SHARP LTR. DATED 8-8-78
		8	2-A/C UNIT ADDED AT ℄ SHIP ON 26'-0 FLAT FR. 170-171. VENTS ADDED CARRY AIR TO MAIN, AUX. & REEFER CONSOLES FR. 161-171 P & S.		
		1 & 3	3-33"x 20" VENT LOWERED 4" TO CLEAR MAIN FEED PIPE ON PLAN "3-A" (S) FR. 170 (2) TYPE "E" ALSO LOWERED TO CLEAR WIREWAY AS SHOWN ON SEC. "1-A" & "1-B"		
		8	4-13" DIA. TYPE "E" TERM. RELOCATED ON 26'-0 FLAT (S) FR. 159-160 TO CLEAR LIGHTING FIXTURE.		
		3 & 5	5-VENTS REV. ON "3-A" & "5-B" (S) FR. 174-181, 24'-0" OFF ℄ TO CLEAR STRUCT. G.D.R.		
4	7/31/78	7	1-15"x 8" VENT MVD AFT ABT 12" AS SHOWN ON 26'-0 LVL (S) FR. 166-167 AS PER Y.I.S. 4650-22-276.	W.S.	8/4/78 JJA
		8	2-VENTS REVISED ON 26'-0" LVL (S) FR. 169-171 AS PER Y.I.S. 4650-22-208		
5	2/9/79	10	1-REVISED DUCT. 36FT FLAT. STBD. FR#165. TO CLEAR ELEC. CABLES.		
		10	2-ADDED LOCAT'G DIM. TO DUCT. 36FT FLAT. 41'-6" TO STB'D. FR#170. AS PER YIS 4650-22-338.		
		12	3-REVISED DUCT. 36FT FLAT. 23'-0" TO PORT. FR# 168-169. AS PER YIS-4650-22-294.		
		10	4-REVISED DUCT. 36FT FLAT. 36'-0" TO STB'D. FR#174-176 TO CLEAR DEHUM. UNIT.		
		8	5-REVISED DUCT. 26FT FLAT. 6'-0" TO STB'D. FR#179 TO CLEAR EXIST'G PIPING.		
		6	6-REVISED DUCT. LOW'R LVL. FR#181. PORT. TO AGREE WITH SECT. VIEW.	RL	
		11	7-CHANGED OUTLET CFMS ON 36FT LVL FR#169 FROM 1900 TO 2000 C.F.M.		
		11	8-CHANGED SIZE OF OUTLETS AT BHD#160 36FT LVL. PORT SIDE.		
		12	9-REVISED 5" EXHAUST VENT ON 36'-0" LVL FR. 166-178 (PORT).	WAS	
	8/10/79	12	10-12" DIA DUCT MVD FWD 4" AS SHOWN ON PLAN "11-A" (PORT) FR. 166-168		
	7/31/79	7	11-REVISED 18"x12" DUCT ON 26'-0" LVL FR 174-179 STB'D TO CLEAR PIPING.		
	8/1/79	3	12-OFF ℄ DIM. CHANGED FROM 8'-0" TO 9'-0" TO CLEAR ELECT CABLES & STRUC ON 14"x10" SUPP VENT FR 161-162 (STB'D) PLAN 3-A.	JD	9/27/79 JJA
6	12/30/80	8	1-ADDED PAIR OF FLANGES IN SUPP DUCT 18x7¾" BET'N FR 169-170, 16'-7" OFF ℄ PORT SIDE ON 26'-0" LVL AS PER YIS 4650-22-595		1/16/80
		8	2-ADDED DET. NO. FOR TWO DIFF. 15"x15" IN FRONT OF MAIN CONSOLE PORT SIDE 26'-0" LVL TO AGREE WITH Y.I.S.-4650-22-589	JD	JJA

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	8/25/77	2	1-MOVED 14"x10" SUPPLY VENT 8" FWD BETWEEN FR. 161-162, BELOW 26'-0" LEVEL (S), TO CLEAR HORIZ. CABLEWAY. OFFSET SAME VENT NEAR 11½" DIA. AIR TERM. TO CLEAR VERTICAL CABLES.	HMF	G.G. SHARP LTR. DATED 2-8-78
		4	2-LOWERED 15"x12½" & 12½"x16" VENTS BETWEEN FR. 160-165, BELOW 26'-0" LEVEL (P), TO CLEAR HORIZONTAL CABLEWAY.		
		7	3-CHANGED OFFSET & ELEV. OF 17"x8" SUPPLY VENT BETWEEN FR. 160-165, 26'-0" LEVEL (S) FOR CARGO REFRIG. PIPING.		
		10	4-REDESIGNED 20"x10" WET AIR DISCH. DUCT FROM DH UNIT, BETWEEN FR. 175-177 AT 36'-0" LEVEL (S) TO CLEAR W 21 x 44# BEAMS. (SECT. "1-A")		
		10	5-REVISED SUPPLY & EXHAUST VENT BETWEEN FR. 178-181 AT 36'-0" LEVEL (S), OUTBD OF SUPPLY RISER (SYS-1-179-3) TO CLEAR W 21 x 44# BEAMS & CABLEWAY.		
		10	6-SHORTENED 23½"x28" BY 35"x20" TRANSITION & ADDED 35"x20" OFFSET TO SUP. VENT BETWEEN FR. 178-179 & APPROX. 40' OFF ℄ SHIP TO CLEAR CABLEWAY.		
		11	7-OFFSET 42"x8" VENT BELOW 18" BEAM IN LIEU OF PENETRATING BEAM. DELETED STRUCTURAL PENETRATION 20-V-2. SHT. #1.		
		8.	8-CHANGED DIMEN. OF 15"x20" SUPPLY VENT BETWEEN FR. 179-180 ON 26' LEVEL AT ℄ SHIP FROM 32½" TO 31.		
2	12/16/77	4 & 5	1-20"x14½" VENT REVISED ON PLAN "5-B" ABT 9'0" OFF ℄ TO CLEAR PIPING (S) FR. 178-181. "4-A" CHG'D.	W.S.	G.G. SHARP LTR. DATED 2-8-78
		2 & 3	2-11" ϕ TERM. MVD FWD OF FR. 170 & OUTBD TO CLEAR PIPING BELOW 26'-0 FLAT ON PLAN "3-A" (S) FR. 170-172 - DET'S. "1-A" & "1-B" REVISED.		
		6, 6, 7	3-REVISED VENT ON 26'-0" LVL (S), FR'S. 168-181 TO SUIT ADDED REF #2.		
		10	4-20"x10" WET AIR DISCH. REVISED AT 2ND DK. (S), FR'S. 176-177 DUE TO STRUCT. LIMITATIONS.		
		12	5-CHANGED SIZE OF VENT OPNG ON 36'-0" LVL (P), FR. 165 FROM 18"x24" TO 12"x32".		
		ALL	6-PENETRATIONS CHG'D AS NOTED TO SUIT STRUCT. BOOKLET BY 21 DEPT.		
		11	7-8"x4" P.T. DELETED ON PLAN 11-A, 36'-0 LVL (P) ABT 16' OFF ℄		
			8-NUMERICAL CAPTIONS ADDED TO PRINCIPLE VIEWS.		
			CONT'D. NEXT COLUMN		

HULL	DESIGN	CHARGE
4651	" " "	
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" & ½"=1'-0" DATE 7-15-77
DRAWN HMF APPROVED
TRACED APPROVED
CHECKED BEM APPROVED HBK

PLAN NO. M-4650-191-11-2 ALT. NO. 6

HVAC A/D MACH'Y SPACE
PLAN & L/M

HULL	4650-51	APPROVAL LETTERS			
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-15-77				
A.B.S.	X				
U.S.C.G.	3-7-78				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

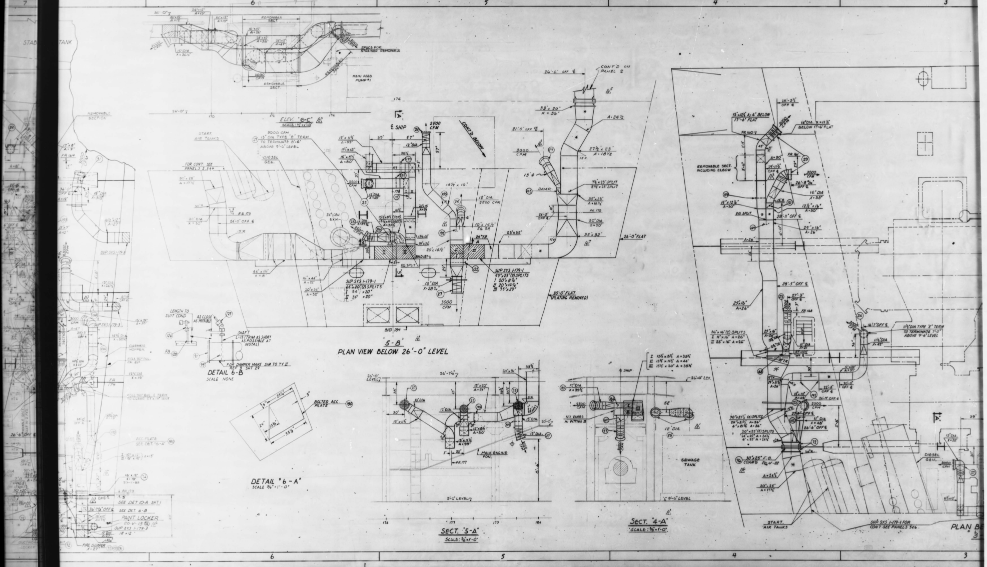
(2) OF 2 DRAWINGS
(36'-0 LEVEL & BELOW)

REFERENCE PLANS

NO.	PLAN NO.	TITLE
5		
4		
3		
2	M-4650-111-21	ARRGT. OF PIPING 26' & 36' LVL(S) AFT MODULE #7
1		SEE DWG. M-4650-191-11-1

DATE OF ISSUE	
ALTERATION	[illegible]
ENGINEERING DISTRIBUTION	[illegible]
MAIL — OWNERS	[illegible]
AMERICAN BUREAU	[illegible]
LLOYD'S R.S.	[illegible]
U.S.M.A.	[illegible]
U.S. NAVY	[illegible]
U.S.C.G.	[illegible]
JOINER CONT'R.	[illegible]
INSPECTION — OWNER'S INSP.	[illegible]
AM. BU. INSP.	[illegible]
LLOYD'S INSP.	[illegible]
U.S.M.A. INSP.	[illegible]
U.S. NAVY INSP.	[illegible]
U.S.C.G. INSP.	[illegible]
OFFICE — HULL DRAFT.-21	[illegible]
MACH. DRAFT.-22	[illegible]
ELEC. DRAFT.-23	[illegible]
OUTFIT. DRAFT.-25	[illegible]
ESTIMATING	[illegible]
MISC. — PRODUCTION (SCO)	[illegible]
ORDER DEPT.	[illegible]
JOINER CONT. YARD	[illegible]
TOTAL ENG'R. DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
YARD — PIECE RATE-11	[illegible]
TEST DEPARTMENT	[illegible]
STRUCTURAL — GROUND ASSEMBLY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
STRUCT. SUPER.	[illegible]
OPTICAL DETAIL	[illegible]
WET DOCK	[illegible]
MACH'Y & OUTFIT. — PIPE SHOP-53	[illegible]
OUTFIT. #1 PIER	[illegible]
PIPE DRAFT-52	[illegible]
BOILER SHOP-58	[illegible]
OUTSIDE MACH.-60	[illegible]
ELECTRIC SHOP-70	[illegible]
SHEET MET. SHOP-76	[illegible]
COPPER SHOP-51	[illegible]
PAINT SHOP-78	[illegible]
OTHER — WELDING	[illegible]
MOLD LOFT-41	[illegible]
BRACKET SHOP	[illegible]
TOTAL YARD DIST.	[illegible]

M-659


ELEV. "6-C"
SCALE: ½"=1'-0"
"5-B"
PLAN VIEW BELOW 26'-0" LEVEL
DETAIL 6-B
SCALE NONE
DETAIL "6-A"
SCALE ¾"=1'-0"
SECT. "5-A"
SCALE: ⅜"=1'-0"
SECT. "4-A"
SCALE: ⅜"=1'-0"
PLAN BE
CONT'D BELOW
CONT'D ON PANEL 2
26'-0" FLAT
20'-0" FLAT (PLATING REMOVED)
DIESEL GEN.
START. AIR TANKS
MAIN FEED PUMP #1
SPACE FOR STRAINER REMOVABLE
REMOVABLE SECT.
REMOVABLE SECT. INCLUDING ELBOW
BOLTED ACC PLATE
SEWAGE TANK
MAIN ENGINE FDN.
PAINT LOCKER
FIRE DAMPER
GARBAGE HOPPER
SUP SYS 1-179-1
SUP SYS 1-179-1 FOR CONT SEE PANELS 5&6
SUP SYS 1-179-3
3000 CFM
2500 CFM
BHD 181
BHD 184
STAB TANK
7
6
5
4
3

AUTOMATION INDUSTRIES, INC.
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NOV 1980 10X

BUILDERS PLAN NO. M4650-191-11-2

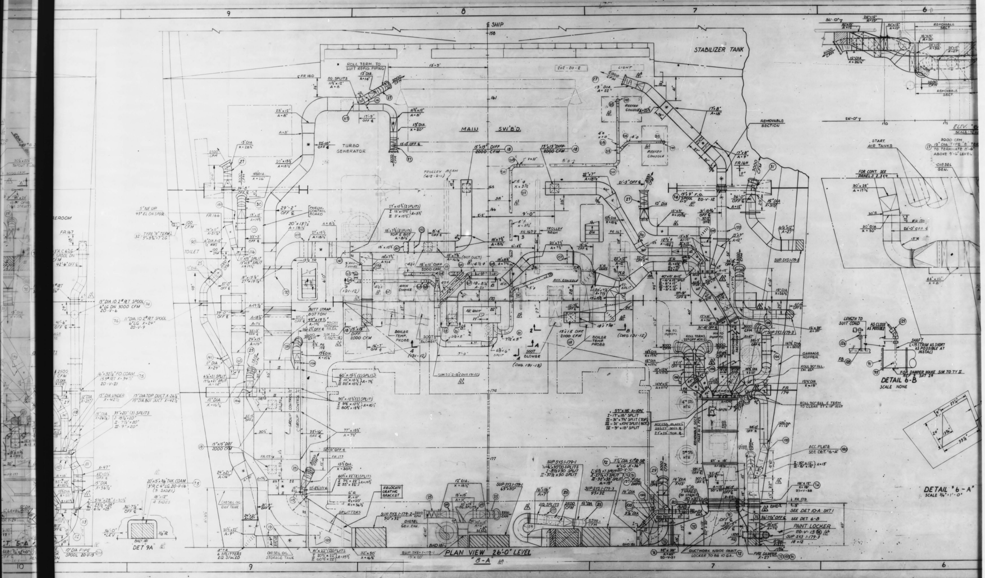
FRAME 2 OF 4

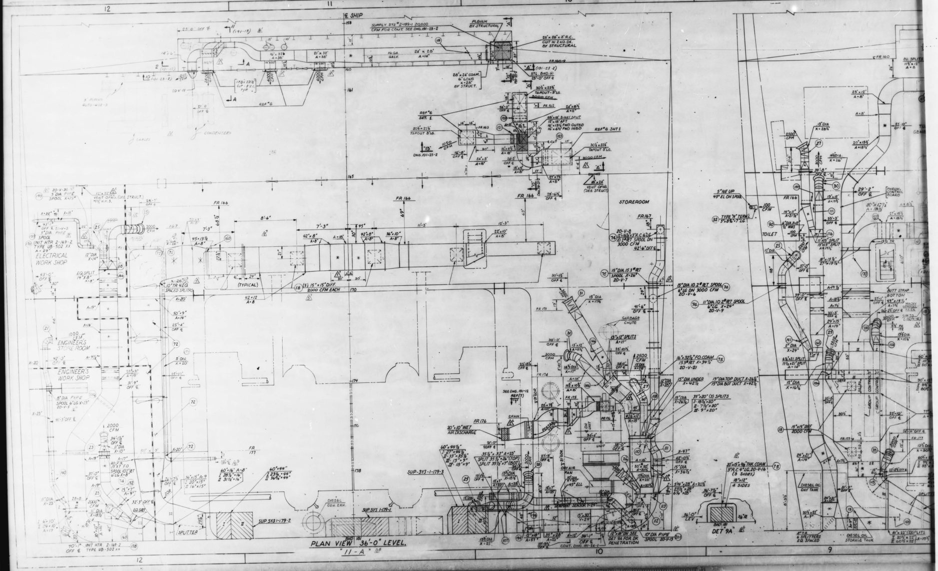
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-11-2

FRAME 3 OF 4


9
8
7
6
10
SHIP
STABILIZER TANK
MAIN SW'B'D.
TURBO GENERATOR
ROLL TERM. TO SUIT REFIG PIPING
REEFER CONSOLE
REMOVABLE SECTION
TROLLEY BEAM
PNEUM. CONTROL BOARD
BUTT STRAP BOTTOM
BOILER TEMP. PROBE
SOOT BLOWER
AUX. CONSOLE
MAIN CONSOLE
A/C UNIT
TOILET
GARBAGE HOPPER
ACC. PLATE SEE DET. "6-A"
PAINT LOCKER
FIRE DAMPER
DUCTWORK INSIDE PAINT LOCKER TO BE 10 GA.
DIESEL OIL STORAGE TANK
DIESEL OIL DAY TANK
DIESEL GEN. EXH.
RELOCATE GRATING BRACKET
SPLITTERS
DET 9A
BHD 181
START. AIR TANKS
DIESEL GEN.
ELEV. "6-
REMOVABLE SECT
LENGTH TO SUIT COND
AS CLOSE AS POSSIBLE
SHAFT
FOR DAMPER MAKE SIM TO TY II
DETAIL 6-B
SCALE NONE
DETAIL "6-A"
SCALE 3/4"=1'-0"
PLAN VIEW 26'-0" LEVEL
"8-A"


12
11
10
9
℄ SHIP
SUPPLY SYS 2-189-1 20,000 CFM FOR CONT. SEE DWG. 191-23-2
PLENUM BY STRUCTURAL
26" x 26" x 3" R.C. CUT IN 2 ND. DK. BY STRUCTURAL
26" x 24" COAM. 6" LONG X-25" BY STRUCT.
STL. BHD. @ 25'-0" OFF ℄
FR 166
FR 167
FR 171
FR 174
FR 176
FR 177
ELECTRICAL WORK SHOP
ENGINEER'S STORE ROOM
ENGINEER'S WORK SHOP
UNIT HTR 2-169-2 TYPE UB-502 XX
STOREROOM
GARBAGE CHUTE
(TYPICAL)
(3) 15" x 15" DIFF. 2000 CFM EACH
20" x 10" WET AIR DISCHARGE
DRY AIR FAN
DIESEL GEN. EXH.
SUP SYS 1-179-1
SUP SYS 1-179-2
SUP-SYS-1-179-3
CONT. DWG. 191-26-1
DET 9A
TOILET
DIESEL OIL DAY TANK
DIESEL OIL STORAGE TANK
PNEUM. CONTROL BOARD
BUTT STRAP BOTTOM
6 SPLITTERS EQ. SPACED
SPLITTER

PLAN VIEW 36'-0" LEVEL.

"11-A"

AUTOMATION INDUSTRIES, INC.
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BUILDERS PLAN NO. M4650-191-11-2

FRAME 4 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-191-20

NOV 1980 10X

FRAME 1 OF 4

ST OF S TURAL PENETRATIONS

ATION		COAMING				STRUCTURE PENETRATED	DECK	L/M ITEM #
NCE OFF ℄	HEIG	SIZE	R.C.	MATERIAL	LGTH			
(S)		24" x 8"	F.O.	10.2 # ℞	9"	BHD.	MAIN	46
(S)	—	" DIA	—	DBL x STRG	6"	DECK	MAIN	19
(S)	—	4" x 24"	6"	30.6 # ℞	9"	DECK	FCSLE	50
(P)		" x 36"	6"	10.2 # ℞	8"	BHD.	MAIN	46
(S)		" x 36"	6"	10.2 # ℞	8"	BHD.	MAIN	
(S)	—	" x 24"	6"	10.2 # ℞	6"	DECK	MAIN	
(S)	—	" x 23"	F.O.	20.4 # ℞	6"	DECK	MAIN	49
ON ℄	—	6" DIA.	—	20.4 # ℞	6"	DECK	FCSLE	
(S)	—	" x 23"	F.O.	20.4 # ℞	6"	DECK	FCSLE	
(S)	—	" x 18"	6"	40.8 # ℞	6"	DECK	MAIN	51
(P)	—	" x 18"	6"	40.8 # ℞	14"	DECK	MAIN	
(P)	—	" x 17"	6"	30.6 # ℞	6"	DECK	MAIN	50
(P)	—	" x 16"	6"	20.4 # ℞	6"	DECK	MAIN	49
(S)	—	" DIA	—	SCH. 40	12"	DECK	FCSLE	52
(S)	—	" DIA	—	DBL x STRG	6"	DECK	MAIN	18
(S)	—	" x 18"	6"	20.4 # ℞	6"	DECK	FCSLE	49
NT 9	—	" x 24"	6"	15.3 # ℞	6"	DECK	FCSLE	17

RAL NOTES

NTITY OF MATE N IN L/M IS NET NO ALLOWANCE IS MADE FOR SCRAP

GERS FOR DUCT LL BE SPACED A MAXIMUM OF 8'-0" APART. SEE ERENCE No 6 14 & 15.

MENSIONS CALL N DUCTWORK ARE TAKEN FROM UNDER SIDE OF DECK TO CENTER R DIMENSIONS CALLED FOR ON DUCTWORK ARE TAKEN DECK OVER OF DUCT.

CT THICKNESS MPLY TO THE FOLLOWING TABLE:

VERTICAL EXPOS	No 16 USSG (.0598)
RIZONTAL OR CO ERTICAL DUCTS OVER 30"	No 16 USSG (.0598)
RIZONTAL OR CO ERTICAL DUCTS 18½" TO 30"	No 18 USSG (.0478)
IZONTAL OR CO RTICAL DUCTS 12½" TO 18"	No 20 USSG (.0359)
IZONTAL OR CO ERTICAL DUCTS 6" TO 12"	No 22 USSG (.0299)

INSTRUCTIONS OT SHOWN ON THIS PLAN, SEE REFERENCE No 6. VERTICAL DU CLASS MACH. SPACE & BOSUNS STORES BE MADE OU # PLT.

LIST OF MATERIALS

ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	WT	SOURCE	REQ. NO.
1	AXIAL FLOW FAN EXH. SYS. 01-20-0	1	VARIOUS		SIZE 200AF	ITEM No 6 REF. No 3			500027
2	GOOSENECK 8" DIA.	1				REF. No 6 SH. 35			UAO
3	24" x 24"	1				6 34			
4	84" x 24"	1			MADE FROM PC. NO. 23, 24 & 48				
5	W.T. COVER SIZE 8" DIA.	1				REF. #6 SH. 32			
6	30" x 24"	1			MADE FROM PAT. NO. 7				
7	38" x 30"	2			MADE FROM PC. NO. 48	HINGES ON 38" SIDE			
8	LOUVERS 36" x 36"-6" R.C.	2		ABS GR. A	46	REF. #6 SH 36			
9	TERMINALS TYPE "J"	2		COMM'L	SIZE 29" x 7" #16 USSG, ½" W.M.	JUNIPER INDUSTRIES INC.			504858-M
10		1			14" x 14"				
11		1			15" x 18"				
12		2			3" DIA. #22 USSG				
13	W.M. GRILLE	2		A 576 GR 1008	30" x 16" #16 USSG	REF. #6 SH. 15			504832-A
14	DAMPER REGULATOR	1	BRASS	COMM'L	MARSTO MACHINE CO MODEL 13M	FOR FIRE DAMPER			504859-R
15		8	VARIOUS	CAD. PLTD.	13	BAL			
16		4	VARIOUS		13L	BAL			
17	15.3 # PLATE	50 S.F.	STL. GALV.	ABS GR. A		ELEV. "9-A"			*
18	6" I.P.S. PIPE DBLE x STRG	1 L.F.	STEEL		ASTM-A53-TYPE "S" GR "B" SEAMLESS	1-6" LG.			504899-A
19	8"	1 L.F.				1-6" LG.			
20									
21									
22									
23	W.M. SCREEN	23 SQ FT.	STL. GALV.	A 576 GR 1008	SIZE ½" x ½"	FOR PC. NO. 4 & 88 REF. 6 SHT. 15			504832-A
24	"U" FRAME	32 L.F.		A 525	¾" WIDE MADE FROM IT. 40	23			UAO
25	W.T. COVER SIZE-37½" x 37½"-6" R.C.	2	VARIOUS		MADE FROM PAT. 11	REF. #6 SH 32K			
26	GOOSENECK	1			SIZE 18" x 15"	34			
27	W.T. COVER SIZE - 19" x 18"	1			MADE FROM PAT. NO. 4	32			
28	SPOOL 6" LG. 8" DIA.	1	STEEL	ABS GR. A	MADE FROM PC. NO. 50	8			
29	12" 8"	1			47				
30	6" 6"	1			50				
31	6" LG 36"	1			49				
32	6" LG 12" x 23" F.O.	2			49				
33	9" LG 24" x 24"-6" R.C.	1			48				
34	6" LG. 20" x 16"	1			49				
35	18" x 15"	1			49				
36	20" x 18"	2			51				
37	24" x 8"	1			46				
38	26" x 24"	1			46				
39	24½" x 17"	1			50				
40	SHEET STEEL 16 GA.	2945 SQ.FT.	STL. GALV.	A 525	FOR DUCT & DAMPER BLADES				*
41	18 GA	784							*
42	20 GA.	98			& COL. PLT'S				*
43	10 GA.	136			DAMPER BLADES & DUCT				*
44	10 GA.	300			DUCT & FLG'S.	REF. #6 SH. 10			*
45	7.65 # PLT.	10		ABS GR. A	FLANGES	10			*
46	10.2 #	239			SPL'S. FLG'S. LOUVER'S & HOOD	8, 10 & 36			*
47	12.75 #	4			SPOOLS	8			*
48	17.85 #	158			GOOSENECKS	34			*
49	20.4 #	21			SPOOLS	7			*
50	30.6 #	15							*
51	40.8 #	7							*
52	SCH. 40 PIPE 8" DIA.	4 L.F.		ASTM A53 GR. B	GOOSENECK	35			*
53	FLAT BAR 1" x ⅛"	9		ABS GR. A	HANGERS	11			*
54	1" x ¼"	13							*
55	1" x ⅜"	46							*
56	RECT. STUD CLIPS	60	STEEL	COMM'L				NELSON #101-084-029	504829-N
57	BOLTS, HEX HD. REG.	61	STL. GALV.	ASTM A-307 GR B ANSI B18.2.1	¼"-20NC-2A x 1" LG.	10			504830-AC
58		795			⅜"-16NC-2A x 1" LG.	10 & 11			
59		40			½"-13NC-2A x 1¼" LG.	FOR FAN			
60	NUTS HEX REG.	855		ASTM A-194 GR 1 ANSI B18.2.2	⅜" DIA.-16-NC-2B	REF. #6 SH. 10			
61		61			¼" 20-NC-2B	10			
62		40			½" 13-NC-2B	FOR FAN			
63	#10 RD. HD. SELF TAPPING SCREW	70		COMM'L	⅞" LG. (SLOTTED)	REF. #6 SH. 14 & 8			504830-AC
64	WASHERS FLAT	809			7/16" I.D. x 1" O.D.	FOR PC. NO. 58			
65		40			9/16" I.D. x 1" O.D.	59			
66	GASKET - CHROMELOCK IMPREGNATED	900	FELT		⅛" TK. - 1½" WIDE	FOR GASKETS			504824-W
67									
68	SPIRAL CONDUIT ELBOW 45°	2	STL GALV.	A526	6" DIA TYPE E-45-1	#22 U.S.S. GA.		UNITED SHEET METAL CO.	504844-U
69									
70	BOLTED A.C. PLT.	1	STL. GALV.	A525	SIZE 41" x 42" MADE FROM ITEM 40	REF # 6 SH 23			*
71	HEX HD. BOLT REG.	42		ASTM A-307 GR B ANSI B18.2.1	FOR PC. NO. 70 ⅜"-16NC-2A x ⅞" LG.	23			504830-AC
72	DUCT SEALER	5 GAL.		COMM'L	SPIRAL CONDUIT JOINTS	19		BEN FOSTER 30-02	504866-C
73	TAPE (2" WIDE)	10 ROLLS	FIBERGLASS			19			504824-W
74	RIVETS 3#	2004	STEEL	COMM'L	FLG'S. & HGR'S.	10 & 11			504830-AC
75	4#	1052				10 & 11			
76	#10 RD. SLOT HD. MACH. SCREW	58	STL. GALV.		24NC-2A ¾" LG. A.S. FINISH	15			504830-AC
77	HEX NUT #10	58			24NC-2B A.S. HEAVY FINISH	15			
78	SPOOL 6" LG. 24" x 24"-6" R.C.	1	STEEL	ABS GR. A	MADE FROM PC. NO. 48	8			UAO
79	SPIRAL CONDUIT ELBOW 60°	1	STL GALV.	A526	6" DIA TYPE E-60-3	#22 U.S.S. GA.		UNITED SHEET METAL CO.	504844-U
80	30°	2			6" E-30-2				
81	SPIRAL CONDUIT PIPE	5 L.F.	STL GALV.		3" DIA. .0299" THK.				
82		15			6"				
83	ELBOW 90°	2			6" TYPE E-90-1				
84	45°	1			3" E-45-1				
85	90°	2			3" E-90-1				
86	BOLTS HEX HD REG.	60	STL. GALV.	ASTM A-307 GR B ANSI B18.2.1	⅜" 16NC-2A x 1⅜" LG.	REF. NO. 6 SHT. 10 & 11			504830-AC
87	HOOD 22" x 18" W/CANVAS COVER	2	STEEL	ABS GR. A	MAKE FROM PC. 96				UAO
88	W.M. SCREEN 21" x 17"	2	VARIOUS	A576 GR. 1008	MAKE FROM PC. 23	REF. 6 SHT. 15			504832-A
89	STUD	24	CRES		NELSON STUD	REF. 6 SHT. 32E			504829-N
95	TERMINAL TYPE "J"	1	VARIOUS	COMM'L	SIZE: 18" x 5½" #16 USSG, ½" W.M.	JUNIPER INDUSTRIES INC.		JE-108	504858-M
96	(SPECIAL)	1	VARIOUS		7" x 16" TO 16" x 11"-6" LG., ½"				
97	BOLTED ACCESS PLATE	3	STL. GALV.	A525	16" x 8"	REF. 6, SHT 23 MADE FROM IT. 40			* UAO
98									
99	¼" FLAT HD. MACHINE SCREW	250	STL. GALV.	COMM'L	(FOR BUTT STRAPS)	REF. 6 SHT. 10			504830-AC
100	WIRE MASH GRILLE	1	VARIOUS		SIZE: 16" x 11"	15		ORD. W/TERMINAL	504832-A
101	ANGLE	29 LF	STL	ABS GR. A	2½" x 2½" x ⅜"	FOR GOOSENECK			* UAO

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

UAO-50135-N

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	4/4/78	ALL	1-CUT ABV FOC'SLE DK. SHWN ON DET. "5-D". PLAN ALT'D SHOWING HOOD ON AFT SIDE. NOTES ADDED FOR VENT SYS. CLARIFICATION.	W.S.	
		5	2-NOTE ADDED TO VENT PLENUM AT FR. 6 (S) 16'-3 OFF ℄ INDICATING CM'G HEIGHT 3'-1" ABV FOC'SLE DK. ITS # 1 & 2 PER U.S.C.G. LTR DATED 22 NOVEMBER SER: 4934.		4/12/78
			3-MAT'L CHGD ON SPOOLS 15-V-2, V-14, V-15 & V-17 TO SUIT 21 DEPT.		
			4-ITS 17, 18 & 19 ADDED TO L/M.		
2	8/11/78		1-SPOOL 15-V-1 CH'GD TO FLAT OVAL + LENGTHD TO 9" LNG.	W.S.	
		4, 9 & 12	2-ON SPL LIST 15-V-16 MOVED FROM 6" TO 13½" AFT FR. 22 TO CORRECT. PLAN FOC'SLE DK, DETS "9-C" & "12-D" CHANGED TO SUIT		
	7/14/79	6, 8	3-REVISED EXH. DUCT-MN DK PORT FR# 24-25 TO CLEAR ELECT. CABLES.		
		3	4-IN L/M CHANGED MAT'L OF ITEM #101 FROM STL GALV. TO STEEL.		
		7, 11	5-REVISED EXH. DUCT-MN DK-STB'D. 20'-5" OFF ℄ FR# 19-25 - TO SUIT SHIPS STRUC. + SHOP SK # FP-5		
		12	6-ALT. 8" DUCT-MN DK. STBD. FR# 12 TO CLEAR ELECT. BOX - AS PER SHOP SK # FP-10.		
		12	7-ALT. 6" DUCT-MN DK. STB'D. FR# 15-16 TO SUIT SHOP SK # FP-10		
		9	8-ADDED OPTICAL DETAIL MKS TO ELEV. VIEW - "9-A"	RL	
		4	9-SPOOL # 15-V-11 CHG FROM 6" TO 14" LONG TO SUIT REF. DWG # 4.		7/26/79
	6/22/79	7-8	10-REVISE EXHAUST DUCT TO CLEAR OPER. SHAFT P&S FR 17-21		
		8	11-REVISE EXHAUST DUCT TO CLEAR PIPING ON PORT SIDE FR 12-16	J.D.	

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN
DATE 10-7-77
DRAWN HHF
APPROVED
TRACED
APPROVED
CHECKED R.E.M.
APPROVED

PLAN NO. M-4650-191-20
ALT. NO. 2

HVAC A/D MAIN DK. & ABV. FWD. FR. 45

APPROVAL LETTERS					
HULL	4650	4651			
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-18-77				
A.B.S.	☒				
U.S.C.G.	11-22-77				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

O.D. MARKS
3/17/78

UNIT 9640

NO.	PLAN NO.	TITLE
12	M-4650-129-05-05	BULWARK FR. 153½ FWD
11	-129-02-20, 21	MAIN DK. PLTG. & GDRS. FWD.
10	-111-21-04	HVAC DIAG. 2ND DK. & BELOW FWD. FR. 157
9	-129-01-39	STRUCTURAL TRUNKS FWD. FR. 18
8	-129-02-29	FOCSLE DK. PLTG. & GDRS.
7	-129-04-20	BREAK WATER & BOOBY HATCH
6	EF-531	STD. PLAN A/C & VENT. CONST. & DET.
5		FDNS. MISC. MACH., ELEC. & ETC.
4	-191-21-1, 2	HVAC A/D 2ND DK & BEL. FWD. FR. 45
3	-191-5	HVAC FAN LIST
2	-111-21-01	HVAC DIAG. MN. DK. & ABV.
1	-191-4	HEATING & COOLING LOAD CALC'S.

REFERENCE PLANS

		DATE OF ISSUE			
	4650-51	4650-51	4650-51 REPL.	4650-51 REPL.	
ALTERATION	0	0	1	2	
ENGINEERING DISTRIBUTION	[illegible]	12-2-77	9-18-78	7-30-79	
OWNERS	5		3	3	
AMERICAN BUREAU					
LLOYD'S R.S.					
U.S.M.A.					
U.S. NAVY					
U.S.C.G.	3		3	3	
JOINER CONT'R.					
OWNER'S INSP.		1	1	1	
AM. BU. INSP.					
LLOYD'S INSP.					
U.S.M.A. INSP.		1	1	1	
U.S. NAVY INSP.					
U.S.C.G. INSP.					
HULL DRAFT - 21	1	1	1	1	
MACH. DRAFT - 22	2	2	2	2	
ELEC. DRAFT - 23	1	1	1	1	
OUTFIT. DRAFT - 25					
ESTIMATING					
PRODUCTION (SCD)					
ORDER DEPT.					
JOINER CONT. YARD					
TOTAL ENG'R. DIST.	15	7	13	13	
YARD DISTRIBUTION					
GPM					
PIECE RATE - 11	1	1	1		
TEST DEPARTMENT					
STRUC. PLANNING					
GROUND ASSEMBLY	9	9	9		
NO. WAY					
NO. WAY					
NO. WAY					
NO. WAY					
STRUCT. SUPER.	2	2	2		
OPTICAL DETAIL - 45	2	2	2		
WET DOCK					
PIPE SHOP - 52					
OUTFIT. #1 PIER					
PIPE DRAFT - 52	2	2	2		
BOILER SHOP - 58	1	1	1		
OUTSIDE MACH. - 60	3	3	3		
ELECTRIC SHOP - 70					
SHEET MET. SHOP - 74	1	1	4		
COPPER SHOP - 81					
PAINT SHOP - 75	1	1	1		
WELDING					
MOLD LOFT - 41	1	1	1		
BRACKET SHOP					
F. BROWN			1		
P. MILLER			1		
TOTAL YARD DIST.					

△ TO SHEET METAL 9/16/79

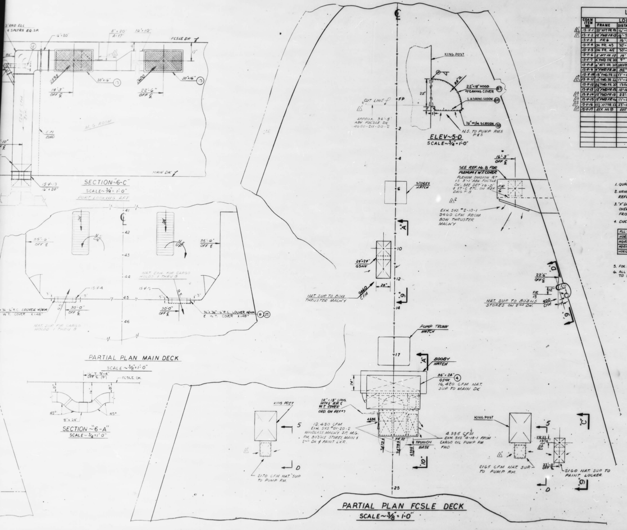
M-674

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-20

FRAME 2 OF 4


3" RAD ELL
4 SPLTRS EQ. SP.
16"×20"
8"×20"
A=17"
16"×10"
FCSLE DK
17"
30"×16" ⑬
30"×16" ⑬
2595
2600
14'-3" OFF ℄
22'-6" OFF ℄
M.G. ROOM
E.M. BHD
MAIN DK
15-V-13
16"×20"
35'-6" OFF ℄
N.S. DN
N.E. UP
NAT. EXH. FOR CARGO HOLDS 1 THRU 8
15-V-4
15-V-5
30'-0" OFF ℄
36"×36"-6"R.C. LOUVER W/WM & W.T. COVER X=48"
36"×36"-6"R.C. LOUVER W/WM & W.T. COVER X=48" ⑧
NAT. SUP. FOR CARGO HOLDS 1 THRU 8
41
42
43
44
45
46
FCSLE DK.
KING POST
22"×18" HOOD W/CANVAS COVER ㊼
LASHING HOOK
1/2" W/M SCREEN ㊽
N.S. TO PUMP RMS P&S
CUT LINE
FP
APPROX. 34'-8" ABV FOC'SLE DK 4650-211-00-2
STORES HATCH
16'-3" OFF ℄
SEE REF. No. 8 FOR PLENUM & W.T. COVER
PLENUM DIVISION PLT IS 3'-1" ABV. FOC'SLE DK. SEE DET "16-D" & 17-C ETC. ON REF DWG # 8
FR 6
EXH. SYS. #2-10-1 9460 CFM FROM BOW THRUSTER MACH'Y
24"×24" GSNK
9460 CFM
NAT. SUP. TO BOW THRUSTER MACH'Y
22'-6" OFF ℄
FR 13
NAT. SUP. TO BO'S'NS STORES ON 2ND DK.
400 CFM
PUMP TRUNK HATCH
BOOBY HATCH
84"×24" ④ GSNK. 16,420 CFM NAT. SUP TO MAIN DK
24"×18" OPNG. WITH 1/2" W.M. & W.T. COVER ORD. ON REF #7
19,430 CFM EXH. SYS. #01-20-2 WINDLASS MACH'Y SP, M.G. RM, BOS'NS STORES, MAIN & 2ND DK & PAINT LKR.
4.335 CFM EXH. SYS. #4-18-1 FROM CARGO OIL PUMP RM FWD
TRUNION BASE
KING POST
2170 CFM NAT. SUP TO PUMP RM.
2165 CFM NAT. SUP. TO PUMP RM.
2160 NAT. SUP. TO PAINT LOCKER.
FR 22
23'-0" OFF ℄
"A"
"C"
"D"
"6"
"9"
"10"
2
4
6
10
12
14
17
25

SECTION "6-C"
SCALE ~3/4" = 1'-0"
PORT LOOKING AFT

PARTIAL PLAN MAIN DECK
SCALE ~3/8" = 1'-0"

SECTION "6-A"
SCALE ~3/4" = 1'-0"

ELEV ~5-D
SCALE ~3/4" = 1'-0"

PARTIAL PLAN FCSLE DECK
SCALE ~3/8" = 1'-0"

LIST OF STRUCTURAL PENETRATIONS

COAM ITEM NO	LOCATION			COAMING				STRUCTURE PENETRATED	DECK	L/M ITEM#
	FRAME	DISTANCE OFF ℄	HEIGHT	SIZE	R.C.	MATERIAL	LGTH			
15-V-1	20" AFT FR 19	16'-0" (S)	X=12"	24"×8"	F.O.	10.2 # ℞	9"	BHD.	MAIN	46
15-V-2	12" FWD FR 13	16'-7" (S)	—	8" DIA	—	DBL X STRG	6"	DECK	MAIN	19
15-V-3	FR 6	16'-3" (S)	—	24"×24"	6"	30.6 # ℞	9"	DECK	FCSLE	50
15-V-4	ON FR. 45	30'-0" (P)	X=48"	36"×36"	6"	10.2 # ℞	8"	BHD.	MAIN	46
15-V-5	ON FR. 45	30'-0" (S)	X=48"	36"×36"	6"	10.2 # ℞	8"	BHD.	MAIN	
15-V-6	5" AFT FR 10	19" (S)	—	26"×24"	6"	10.2 # ℞	6"	DECK	MAIN	
15-V-7	4" FWD FR 20	9" (S)	—	12"×23"	F.O.	20.4 # ℞	6"	DECK	MAIN	49
15-V-8	4" AFT FR 20	LOCATED ON ℄	—	36" DIA.	—	20.4 # ℞	4"	DECK	FCSLE	
15-V-9	4" FWD FR 20	32" (S)	—	12"×23"	F.O.	20.4 # ℞	6"	DECK	FCSLE	
15-V-10	13" FWD FR 22	17'-6" (S)	—	20"×18"	6"	40.8 # ℞	6"	DECK	MAIN	51
15-V-11	13" FWD FR 22	17'-6" (P)	—	20"×18"	6"	40.8 # ℞	14"	DECK	MAIN	
15-V-12	8½" FWD FR 20	13½" (P)	—	24½"×17"	6"	30.6 # ℞	6"	DECK	MAIN	50
15-V-13	12" FWD FR 25	10'-10" (P)	—	20"×16"	6"	20.4 # ℞	6"	DECK	MAIN	49
15-V-14	12" FWD FR 13	22'-6" (S)	—	8" DIA.	—	SCH. 40	12"	DECK	FCSLE	52
15-V-15	12" FWD FR 16	17'-0" (S)	—	6" DIA.	—	DBL X STRG	6"	DECK	MAIN	18
15-V-16	13½" AFT FR 22	23'-0" (S)	—	15"×18"	6"	20.4 # ℞	6"	DECK	FCSLE	49
15-V-17	REF. No 9	REF. No 9	—	24"×24"	6"	15.3 # ℞	6"	DECK	FCSLE	17

GENERAL NOTES

1. QUANTITY OF MATERIAL SHOWN IN L/M IS NET. NO ALLOWANCE IS MADE FOR SCRAP
2. HANGERS FOR DUCTWORK SHALL BE SPACED A MAXIMUM OF 8'-0" APART. SEE REFERENCE No. 6 SHEET No. 14 & 15.
3. "X" DIMENSIONS CALLED FOR ON DUCTWORK ARE TAKEN FROM UNDER SIDE OF DECK OVER TO CENTER OF DUCT. "A" DIMENSIONS CALLED FOR ON DUCTWORK ARE TAKEN FROM DECK OVER TO TOP OF DUCT.
4. DUCT THICKNESS SHALL COMPLY TO THE FOLLOWING TABLE:

ALL VERTICAL EXPOSED DUCTS	No 16 USSG (.0598)
HORIZONTAL OR CONCEALED VERTICAL DUCTS OVER 30"	No 16 USSG (.0598)
HORIZONTAL OR CONCEALED VERTICAL DUCTS 18½" TO 30"	No 18 USSG (.0478)
HORIZONTAL OR CONCEALED VERTICAL DUCTS 12½" TO 18"	No 20 USSG (.0359)
HORIZONTAL OR CONCEALED VERTICAL DUCTS 6" TO 12"	No 22 USSG (.0299)

5. FOR INSTRUCTIONS & DETAILS NOT SHOWN ON THIS PLAN, SEE REFERENCE No. 6.
6. ALL VERTICAL DUCT IN WINDLASS MACH. SPACE & BOSUNS. STORES TO BE MADE OUT OF 5.1# PLT.

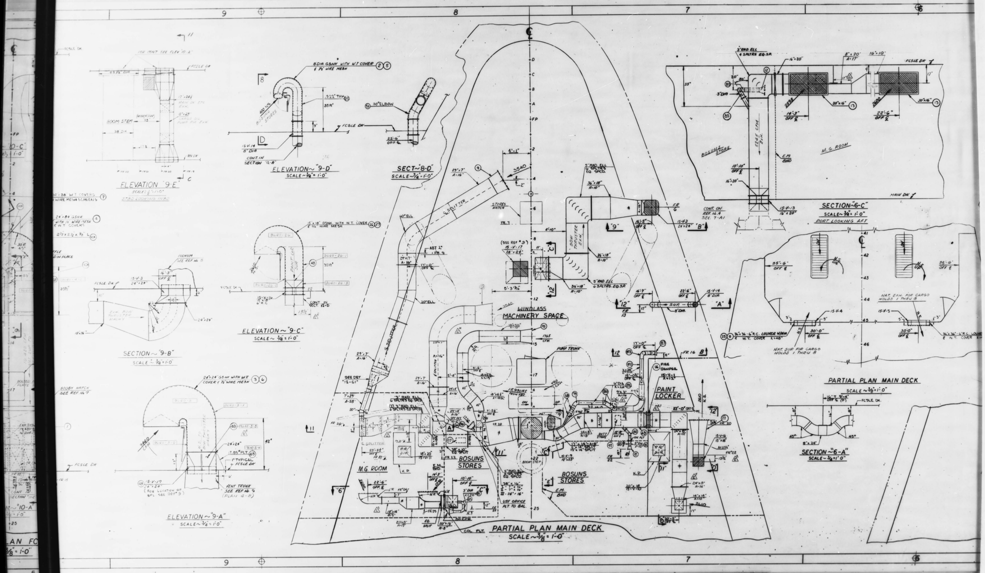
ITEM	NAME
1	AXIAL FLOW FAN EXH. SYS. 01-20-0
2	GOOSENECK 8" DIA.
3	24"×24"
4	84"×24"
5	W.T. COVER SIZE 8" DIA.
6	30"×24"
7	38"×30"
8	LOUVERS 36"×36"-6"R.C.
9	TERMINALS TYPE "J"
10	
11	
12	
13	W.M. GRILLE
14	DAMPER REGULATOR
15	
16	
17	15.3 # PLATE
18	6" I.P.S. PIPE DBLE X STRG
19	8
20	
21	
22	
23	W.M. SCREEN
24	"U" FRAME
25	W.T. COVER SIZE-37½×37½-6"R.C.
26	GOOSENECK
27	W.T. COVER SIZE - 19"×18"
28	SPOOL 6" LG. 8" DIA.
29	12" 8"
30	6" 6"
31	6" LG 36"
32	6" LG 12"×23" F.O.
33	9" LG 24"×24"-6"R.C.
34	6" LG. 20"×16"
35	18"×15"
36	20"×18"
37	24"×8"
38	26"×24"
39	24½"×17"
40	SHEET STEEL 16 GA
41	18 GA
42	20 GA
43	10 GA
44	10 GA
45	7.65# PLT
46	10.2#
47	12.75#
48	17.85#
49	20.4#
50	30.6#
51	40.8#
52	SCH. 40 PIPE 8" DIA
53	FLAT BAR 1"×1/8"
54	1"×1/4"
55	1"×3/8"
56	RECT. STUD CLIPS
57	BOLTS, HEX HD REG
58	
59	
60	NUTS HEX HVY
61	
62	
63	#10 RD. HD. SELF TAPPING SCREW
64	WASHERS FLAT
65	
66	GASKET-CHROMELOCK IMPREGNATED
67	
68	SPIRAL CONDUIT ELBOW 45°
69	
70	BOLTED A.C. PLT.
71	HEX HD. BOLT REG.
72	DUCT SEALER
73	TAPE (2" WIDE)
74	RIVETS 3#
75	4#
76	#10 RD. SLOT HD. MACH. SCREW
77	HEX NUT #10
78	SPOOL 6" LG. 24"×24"-6"R.C.
79	SPIRAL CONDUIT ELBOW 60°
80	30°
81	SPIRAL CONDUIT PIPE
82	
83	ELBOW 90°
84	45°
85	30°
86	BOLTS HEX HD REG
87	HOOD 22"×18" W/CANVAS COVER
88	W.M. SCREEN 21"×17"
89	STUD
95	TERMINAL TYPE "J"
96	(SPECIAL)
97	BOLTED ACCESS PLATE
98	
99	1/4" FLAT HD. MACHINE SCREW
100	WIRE MASH GRILLE
101	ANGLE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-20

FRAME 3 OF 4


9
8
7
6
ELEVATION "9-E"
SECTION ~ "9-B"
SCALE ~ 3/4 = 1-0
ELEVATION ~ "9-A"
SCALE ~ 3/4 = 1-0
ELEVATION ~ "9-D"
SCALE ~ 3/8 = 1-0
ELEVATION ~ "9-C"
SCALE ~ 3/8 = 1-0
SECT ~ "8-D"
SCALE ~ 3/4 = 1-0
8 DIA GSNK WITH W.T. COVER & 1/2 WIRE MESH
30° ELBOW
FCSLE DK
CONT. IN SECTION 12-A
15" x 18" GSNK WITH W.T. COVER & 1/2 WIRE MESH
24" x 24" GSNK WITH W.T. COVER & 1/2 WIRE MESH
VENT TRUNK SEE REF No. 9
BOOBY HATCH SEE REF No. 7
WINDLASS MACHINERY SPACE
PUMP TRUNK
BOW THRUSTER EXH.
STORES HATCH
PAINT LOCKER
FIRE DAMPER
BOSUNS STORES
M.G. ROOM
K.P.
E.M. BHD
BOOM STEP
COL. PLT.
USE ORIFICE PLT TO BAL
PARTIAL PLAN MAIN DECK
SCALE ~ 3/8 = 1-0
SECTION ~ "6-C"
SCALE ~ 3/8 = 1-0
PORT LOOKING AFT
BOSUNS STORE
M.G. ROOM
MAIN DK
CONT. ON REF. No. 4 SEC. 7-A1
NAT. EXH. FOR CARGO HOLDS 1 THRU 8
NAT. SUP. FOR CARGO HOLDS 1 THRU 8
36" x 36" - 6" R.C. LOUVER W/WM & W.T. COVER
PARTIAL PLAN MAIN DECK
SCALE ~ 3/8 = 1-0
SECTION ~ "6-A"
SCALE ~ 3/4 = 1-0
FCSLE DK
PARTIAL PLAN FC
3/8 = 1-0

AUTOMATION INDUSTRIES, INC.
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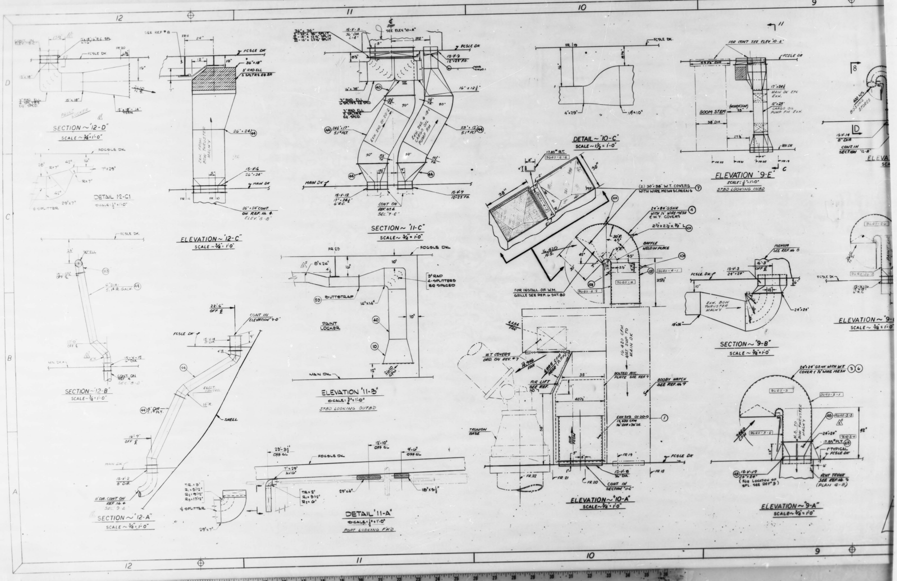
NOV 1980 10X

BUILDERS PLAN NO. M4650-191-20

FRAME 4 OF 4

8
29"x7"
SPLITTER
BOSUN STORES
10'-10"
8


12
11
10
9
D
C
B
A
SECTION ~ "12-D"
SCALE ~ 3/8" = 1'-0"
DETAIL 12-C1
ELEVATION ~ "12-C"
SCALE ~ 3/8" = 1'-0"
SECTION ~ "12-B"
SCALE ~ 3/8" = 1'-0"
SECTION ~ "12-A"
SCALE ~ 3/8" = 1'-0"
SECTION ~ "11-C"
SCALE ~ 3/8" = 1'-0"
ELEVATION "11-B"
SCALE: 3/4" = 1'-0"
STBD LOOKING OUTBD
DETAIL "11-A"
SCALE: 1/2" = 1'-0"
PORT LOOKING FWD
DETAIL ~ "10-C"
SCALE ~ 1 1/2" = 1'-0"
ELEVATION ~ "10-A"
SCALE ~ 3/8" = 1'-0"
ELEVATION "9-E"
SCALE: 1/2" = 1'-0"
STBD LOOKING INBD
SECTION ~ "9-B"
SCALE ~ 3/8" = 1'-0"
ELEVATION ~ "9-A"
SCALE ~ 1/2" = 1'-0"
FCSLE DK
MAIN DK
PAINT LOCKER
SHELL
BUTTSTRAP
TRUNION BASE
W.T. COVERS
AIR LIFT
BOOBY HATCH SEE REF. No 7
BOLTED REC. PLATE SEE REF. 7
(2) 30"x38" W.T. COVERS WITH WIRE MESH SCREENS
BAFFLE WELD IN PLACE
BOOM STEM
EXH. BOW THRUSTER MACH'Y
PLENUM SEE REF. No 8
VENT TRUNK SEE REF. No 5
24"x24" GSNK WITH W.T. COVER & 1/2" WIRE MESH
16,420 CFM NAT SUP TO MAIN DK
FOR INSTALL OF W.M. GRILLE SEE REF. 6 SHT. 80

AUTOMATION INDUSTRIES, INC.
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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-21-1

FRAME 1 OF 4

3 2

LIST OF MATERIALS

ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	WT	SOURCE	REQ'N No.
1	AXIAL FLOW FAN EXH.SYS 2-10-1	1	VARIOUS		SIZE 100AF	ITEM No. 10 REF. No 2			500027
2	EXH. SYS 4-18-1	1	↓		SIZE 40 AF	ITEM No. 11 REF. No. 2			↓
3	TERMINAL - 8"φ x 10½"φ - 11" LG	1	STL GALV.	COMM'L.	TYPE "J" - 7½° SLOPE - ½" W.M.	#22 USSG.		JUNIPER INDUSTRIES	504858-N
4	6"φ x 8"φ - 8" LG	1			↓	↓		↓	
5		2			TYPE "J" 12" x 12" ½" W.M.				↓
6	↓	1	↓	↓	BELLMOUTH 29¼" DIA.	FOR EXH. SYS. 2-10-1, IT. 10 ON REF. 2			500027
7									
8									
9									
10	DAMPER	2	VARIOUS		BALANCE TYPE I 12" x 12"	REF No 4 SHT No. 28 & 29			
11									
12									
13									
14									
15	TERMINAL WIRE MESH GRILLE	1	STL. GALV.	COMM'L.	½" WIRE MESH 60" x 24"	REF. No 4 SHT No. 15			UAO
16	↓	1	↓	↓	1½" WIRE MESH 36" DIA	FOR Pc. No 6 MAKE FROM Pc. No. 17 & 18			↓
17	WIRE MESH SCREEN	9 SQ.FT.	STL. GALV		1½" x 1½" 11 GA.	FOR Pc No 6			504832-E
18	"L" FRAME	10 LIN FT.	↓		3/16"	FOR Pc No 6 REF. No. 4 SH. No. 15			UAO
19									
20	SPOOLS	2	STEEL	ABS GR.A	20" X 18" 6" R.C. 6" LG	MAKE FROM Pc. No 36 REF No 4 SH No 7			UAO
21		1			28" x 10" F.O. 6" LG.	35 4 7			
22		2			23" x 12" F.O. 6" LG	35 4 7			
23		1		↓	28" x 10" F.O. 6" LG	38 4 7			
24									
25	↓	1	↓		29¼" DIA. 6" LG.	35 4 7			
26	ACCESS PLATE	1	VARIOUS		BOLTED 5" x 19" x 8" LG.	39 4 23			
27		1			BOLTED 16" x 30"	39 4 23			
28	↓	1	↓		HINGED DOOR 8" x 18" x 15" LG	39 4 21		ELE. 8-B	↓
29	SPIRAL CONDUIT PIPE	31'8" LIN.FT.	STL. GALV.	A526	6" DIA.	#22 USS. GA.		UNITED SHEET METAL CO	504844-V
30		18'9" L.F.			5" DIA.				
31	90° ELBOW	1			8" DIA TYPE E-90-1				
32	30°	4			6" DIA TYPE E-30-2				
33	60°	1	↓		5" DIA TYPE E-60-3				
34	SPIRAL CONDUIT 90° ELBOW	1	STL GALV	↓	6" DIA. TYPE E-90-1	↓		↓	↓
35	SHEET STEEL	13 SQ FT	STEEL	ABS-GR.A	20.4 #R	FOR SPOOLS REF. No. 4 SH. No. 7			*
36		7			19.85 #R	SPOOLS 4 7			*
37		20			10.2 #R	FLANGES 4 11			*
38		30	↓		7.65 #R	SPOOLS & FLGS 4 7 & 11			*
39		653	STL. GALV.	A525	NO. 10 USSG.	ACC. PLTS., PLENUM, & FLANGES / DUCT			*
40		150	STL. GALV		No. 16 USSG	DUCT			*
41		680			No. 18 USSG	DUCT			*
42		1			No. 12 USSG.	↓			*
43	↓	25		↓	No 22 USSG	DUCT			*
44									
45	FLAT BAR	25 LF		ABS-GR.A	1" x ¼"	HANGERS REF 4 SHT 11			*
46	↓	10	↓	↓	1" x ⅜"	HANGERS 4 11			*
47									
48	TAPPING STRIP	23	STL. GALV	A525	1" x 10GA. MAKE FROM Pc. No 39	ACCESS PLATES 4 23			UAO
49	GASKET CHROMELOCK IMPREGNATED	96 ft	FELT	COMM'L.	1/8 THK. - 1½" WIDE	FLANGES & ACC. PLTS. 4 11 & 23			504829-X
50									
51	MACHINE SCREW	84	GALV. ST'L.	COMM'L.	¼"-20NC-2 ⅝" LG. RD. SLOT HD.	ACC. PLTS. 4 23			504830-AE
52	↓	28	↓	↓	No 10.-24NC-2 ⅝" LG. RD. SLOT HD.	Pc. No 16 4 23			↓
53									
54	HEX HD. BOLT-REG.	366	↓	A307 GR. B	⅜"-16 NC-2, 1" LG.	FLANGES 4 11			504830-AC
55	FLAT WASHER	85	CARBON STL	COMM'L.	7/16 I.D. x 1⅛" OD	FAN FLANGES 4 11			↓
56									
57									
58									
59	HEX NUT A.S.H.	26	GALV. ST'L.	A307 GR. B	No 10.24NC-2	Pc No 52 4 23			504830-AC
60	↓	788	↓	↓	⅜"-16NC-2	Pc No 54, 74 & 75 4 11 & 14			↓
61	SPIRAL CONDUIT 45° ELBOW	1	STL.GALV.	A526	5" DIA TYPE E-45-1	#22 USS. GA.			504844-V
62	SPOOL - 5" DIA. STD PIPE	2'-0"	ST'L	→	SCH. 40 ASTM-A53 SEAMLESS GR B				UAO
63	HEX HD. BOLT	40	GALV. ST'L.	A307 GR. B	⅜"-16NC-2 1¼" LG.	FOR HANGERS			504830-AC
64									
65	TERMINAL 5"φ x 6¾"φ - 7" LG	2	STL GALV.		TYPE "J" - 7½° SLOPE - ½ W.M.	#22 USSG.		JUNIPER INDUSTRIES	504858-N
66	DAMPER	2	VARIOUS		BALANCE TYPE I 5" DIA	REF. 4 SHT # 28 & 29			
67	DAMPER	1	VARIOUS		BALANCE TYPE I 6" DIA	↓ 28 & 29			
68	RECT. STUD CLIPS	50	STEEL		NELSON OR EQUAL #101-084-029	FOR HANGERS			504829-P
69	TERMINAL WIRE MESH GRILLE	2	VARIOUS		½" WIRE MESH 20" X 18" 6" RC	REF # 4 SHT # 15			UAO
70	DUCT SEALER	1 GAL				FOR SPIRAL CONDUIT JOINTS		FOSTER # 30-02	504866-D
71	TAPE (2") 80 MILS THK. 36 YD ROLLS	3 ROLLS	FIBERGLASS			↓		POLYKEN # 290	504824-Z
72									
73	POP RIVET	500	CARBON STEEL PLATED MONEL	COMM'L.	3/16" DIA-SD-6-4-SL	FOR DUCTS, FLGS. & HGRS.			504830-AF
74	HEX HD. BOLT-REG.	12	GALV. ST'L.	A307 GR. B	3/8"~16NC-2 1½" L'G.	↓			504830-AC
75		370			3/8"~16NC-2 ¾" L'G.	FLGS.			
76	A.S.H.	85			½"~13NC-2 1¼"	FAN FLGS.			
77	HEX NUTS	85	↓	↓	½"~13NC-2	ITEM #76			↓
78	FLAT BAR CLIP	28	STEEL	COMM'L.	NELSON STUD CLIP PART NO. 101-084-029	HGRS.			504829-P
79	~~SEAMLESS MECHANICAL STL TUBING~~		~~STEEL~~	~~A519 GR 1010-1020~~	~~SIZE 6" OD x 5" ID~~	~~COLD DRAWN MT-1015 COMM TOL.~~			
80	DAMPER REGULATOR	2	CAD. PL. STL	COMM'L	REF. 4 SHT 28-31 BAL. DAMP.	MARSTO MACH. CO. MOD. 13 L			504859-S
81		3				13			↓
82		-	BRASS		FIRE	13 M		SHAFT 4" L'G	
83		-	↓			24 B			
84	DEFLECTOR PLATE REGULATOR	-	CAD. PL. STL		SPLIT			ROD 30" L'G	
85									
86									
87									

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

UAO-50135-P

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	4/21/78	3	1-RESERV. DELETED ON IT. 28 DESCRIPTION COLUMN REVISED	W.S.	4 24 78
		3	2-RESERV. DELETED ON IT. 70 & 71. VENDORS ADDED.		
		3	3-IT. 79 DELETED FROM L/M.		
		3	4-1½" W.M. CHG'D FROM #13 GA. TO 11 GA. ON IT. 17.		sga
2	6/26/78	6	1-OFFSET ADDED TO 5" DIA. VENT TO CLEAR NEW 8" F.M. - 2ND DK (S) FR. 21-22.	W.S.	
		5	2-SPOOL 16-V-29 CHG'D FROM 24" TO 26" AFT FR. 16 ON L+ST.		
		7	3-DUCT SIZES CHG'D ON "7-C" TO AGREE WITH PLAN OF 2ND DK (P) FR. 20		
		5	4-SPOOL 16-V-31 & 32 CHG'D FROM 6" TO 7" FWD OF FR. 17 TO SUIT 21 DEPT.		7 24 79
	4/23/79	6 7	5-ALT. EXH. DUCT. 2ND DK. PORT SIDE FRAMES #19-24 - AS PER SHOP SK. #MG-1 AND TO CLEAR SHIP STRUCT.	RL	
		9	6-IN ELEV. "9-C1-LOWERED DUCT FROM 16" TO A-17" BEL. DK TO CLEAR SHIPS STRUCT.		
		8 9	7-IN SECT. B-A & ELEV. 9-A1. LENGTHEN'D SPOOL - TO FACILITATE INSTALLATION		
		5	8-IN PART PLAN 2ND DK., STB'D. FRAMES 5 TO 16.-6" DIA. DUCT RAISED FROM 33" TO A-27". TO FACILITATE INSTALLATION		sga

HULL	DESIGN	CHARGE
4651	↓	↓
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN DATE 9-9-77
DRAWN HMF APPROVED
TRACED APPROVED
CHECKED BEM APPROVED WBJr

PLAN NO. M-4650-191-21-1 ALT. NO. 2

HVAC A/D 2ND DECK & BELOW FWD FRAME 45

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	10-6-77				
A.B.S.	☒				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

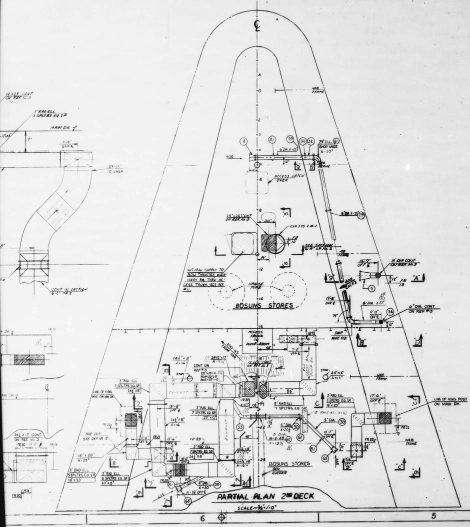
(1) OF (2) DRAWINGS

NO.	PLAN NO.	TITLE
12	M-4650-129-01-01,48	TRANS. SECT. BHD'S. FRS. & STAN. FR. 17-36
11	-129-01-39	STRUCTURAL TRUNKS FWD.
10		FDNS. MISC. MACH. & ELEC.
9	-111-10-17	GENERAL ARRGT. 2ND DK. FWD. FR. 77½
8	-232-00-45	BOATSWAIN'S STOREROOM MN. & 2ND DKS.
7	-129-02,08	FLATS & STRINGERS BELOW 2ND DK.
6	-129-03,1	FORE PEAK FRAMING TRANSV.
5	-129-02,13	2ND DK. PLTG. & GDRS.
4	EF-531	A/C & VENT CONST. DET. & L/M
3	-191-20	HVAC A/D MN. DK. & ABV. FWD. FR. 45
2	-191-5	HVAC FAN LIST
1	-191-4	HEATING & COOLING LOAD CALCS.

REFERENCE PLANS

3 2 1

M-675


6
5
4
3
7
℄
BOSUNS STORES
BOSUNS STORES
ACCESS HATCH OVER
ACCESS TRUNK TO PUMP ROOM
HAWSE PIPE
NATURAL SUPPLY TO BOW THRUSTER MACHINERY RM. THRU ACCESS TRUNK. SEE REF. #11.
24"×26" CONT ON REF No 3
SEE SECTION
6" DIA. CONT ON REF #3
8" DIA CONT. ON REF No 3
LINE OF KING POST ON MAIN DK.
LINE OF KING POST ON MAIN DK.
BOX GIRDER
WEB FRAME
3" RAD ELL 7 SPLTRS EQ. SP.
3" RAD ELL 5 SPLTRS EQ. SP.
3" RAD ELL 6 SPLTRS EQ. SP
ELEVATION
MAIN DK.

PARTIAL PLAN 2ND DECK

SCALE ~ 3/8"=1'-0"

LIST OF STRUCTURAL PENETRATIONS

COAM ITEM NO	LOCATION: FRAME	LOCATION: DISTANCE OFF ℄	LOCATION: HEIGHT	COAMING: SIZE	COAMING: R.C.	COAMING: MATERIAL	COAMING: LGTH	STRUCTURE PENETRATED	DECK	L/M ITEM
16-V-1										
16-V-2										
16-V-3	13½" AFT FR 23	13'-6" (S)	—	20"×18"	6"	17.85# R	6"	DECK	2ND	36
16-V-4	↓	13'-6" (P)	—	20"×18"	6"	17.85# R	6"		2ND	↓
16-V-5	13½" AFT 20	9'-8" (S)	—	10" DIA	—	—	—		37'-8" FLAT	
16-V-6	13½" 20	9'-8" (P)	—		—	—	—			
16-V-7	13½" 22	10'-10" (S)	—		—	—	—			
16-V-8	13½" 22	10'-10" (P)	—		—	—	—			
16-V-9	13½" 23	11'-5" (S)	—		—	—	—			
16-V-10	13½" 23	11'-5" (P)	—		—	—	—			
16-V-11	13½" 24	12'-0" (S)	—		—	—	—			
16-V-12	13½" 24	12'-0" (P)	—		—	—	—			
16-V-13	13½" 20	6'-3" (S)	—		—	—	—		29'-8" FLAT	
16-V-14	13½" 20	6'-3" (P)	—		—	—	—			
16-V-15	13½" 22	7'-3" (S)	—		—	—	—			
16-V-16	13½" 22	7'-3" (P)	—		—	—	—			
16-V-17	13½" 23	7'-9" (S)	—		—	—	—			
16-V-18	13½" 23	7'-9" (P)	—		—	—	—			
16-V-19	13½" 24	8'-3" (S)	—		—	—	—			
16-V-20	13½" 24	8'-3" (P)	—		—	—	—			
16-V-21	13½" 20	4'-10" (S)	—		—	—	—		21'-8" FLAT	
16-V-22	13½" 20	4'-10" (P)	—		—	—	—			
16-V-23	13½" 22	5'-8" (S)	—		—	—	—			
16-V-24	13½" 22	5'-8" (P)	—		—	—	—			
16-V-25	13½" 23	6'-1" (S)	—		—	—	—			
16-V-26	13½" 23	6'-1" (P)	—		—	—	—			
16-V-27	13½" 24	6'-6" (S)	—		—	—	—			
16-V-28	13½" 24	6'-6" (P)	—	↓	—	—	—			
16-V-29	26" 16	39" (S)	—	23"×12"	F.O.	20.4# R	6"		↓	35
16-V-30	11" FWD 19	45" (S)	—	23"×12"	F.O.	20.4# R	6"		29'-8" FLAT	↓
16-V-31	7" 19	45" (S)	—	28"×10"	F.O.	7.65# R	6"		37'-8" FLAT	38
16-V-32	7" 19	48" (S)	—	28"×10"	F.O.	20.4# R	6"		2ND	35
16-V-33	6" AFT FR 10	30" (S)	—	29¼" DIA	—	20.4# R	6"	↓	2ND	↓
16-V-34										
16-V-35	13½" AFT FR 21	5'-8" (S)	—	10" DIA	—	—	—	DECK	13'-8" FLAT	
16-V-36	21	5'-8" (P)	—		—	—	—			
16-V-37	22	6'-0" (S)	—		—	—	—			
16-V-38	22	6'-0" (P)	—		—	—	—			
16-V-39	23	6'-2" (S)	—		—	—	—			
16-V-40	23	6'-2" (P)	—		—	—	—			
16-V-41	24	6'-5" (S)	—		—	—	—			
16-V-42	↓ 24	6'-5" (P)	—	↓	—	—	—	↓	↓	
16-V-43	17½" FWD FR 22	LOCATED ON ℄	X = 19½"	5" DIA.		STD PIPE	24"	BOX GRIDDER	2ND DK.	62

GENERAL NOTES

1. QUANTITY OF MATERIAL SHOWN IN L/M IS NET. NO ALLOWANCE IS MADE FOR SCRAP.
2. HANGERS FOR DUCTWORK SHOWN THUS: ⊠—⊡ SHALL BE SPACED A MAXIMUM OF 8'-0" APART. SEE REFERENCE No. 4 SHEET No. 14 & 15.
3. "X" DIMENSIONS CALLED FOR ON DUCTWORK ARE TAKEN FROM UNDER SIDE OF DECK OVER TO CENTER OF DUCT. "A" DIMENSIONS CALLED FOR ON DUCTWORK ARE TAKEN FROM DECK OVER TO TOP OF DUCT.
4. DUCT THICKNESS SHALL COMPLY TO THE FOLLOWING TABLE: (EXCEPT AS NOTED)

ALL VERTICAL EXPOSED DUCT	No. 16 USSG (.0598)
HORIZONTAL OR CONCEALED VERTICAL DUCTS OVER 30"	No. 16 USSG (.0598)
HORIZONTAL OR CONCEALED VERTICAL DUCTS 18½" TO 30"	No. 18 USSG (.0478)
HORIZONTAL OR CONCEALED VERTICAL DUCTS 12½" TO 18"	No. 20 USSG (.0359)
HORIZONTAL OR CONCEALED VERTICAL DUCTS UNDER 12"	No. 22 USSG (.0299)

5. FOR INSTRUCTIONS & DETAILS NOT SHOWN ON THIS PLAN, SEE REFERENCE No. 4.

ITEM	NAME
1	AXIAL FLOW FAN EXH.SY
2	↓ EXH. SY
3	TERMINAL - 8"φ × 10¾"φ -
4	6"φ × 8"φ -
5	
6	↓
7	
8	
9	
10	DAMPER
11	
12	
13	
14	
15	TERMINAL WIRE MESH GRILLE
16	↓
17	WIRE MESH SCREEN
18	'L' FRAME
19	
20	SPOOLS
21	
22	
23	
24	
25	↓
26	ACCESS PLATE
27	
28	↓
29	SPIRAL CONDUIT PIPE
30	↓
31	90° ELBOW
32	30°
33	↓ 60°
34	SPIRAL CONDUIT 90° ELBOW
35	SHEET STEEL
36	
37	
38	
39	
40	
41	
42	
43	↓
44	
45	FLAT BAR
46	↓
47	
48	TAPPING STRIP
49	GASKET CHROMELOCK IMPREGN
50	
51	MACHINE SCREW
52	↓
53	
54	HEX HD. BOLT - REG.
55	FLAT WASHER
56	
57	
58	
59	HEX NUT - A.S.H.
60	↓
61	SPIRAL CONDUIT 45° ELBOW
62	SPOOL - 5" DIA. STD PIPE
63	HEX HD. BOLT
64	
65	TERMINAL 5"φ × 6¾"φ - 7"
66	DAMPER
67	DAMPER
68	RECT. STUD CLIPS
69	TERMINAL WIRE MESH GRILLE
70	DUCT SEALER
71	TAPE (2") 8.0 MILS THK. 36 YD
72	
73	POP RIVET
74	HEX HD. BOLT - REG.
75	
76	↓ A.S.H.
77	HEX NUTS
78	FLAT BAR CLIP
79	~~SEAMLESS MECHANICAL STL TUB~~
80	DAMPER REGULATOR
81	
82	
83	↓
84	DEFLECTOR PLATE REGULAT
85	
86	
87	

*NECESSARY STEEL FOR THESE ITEMS HAS

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-21-1

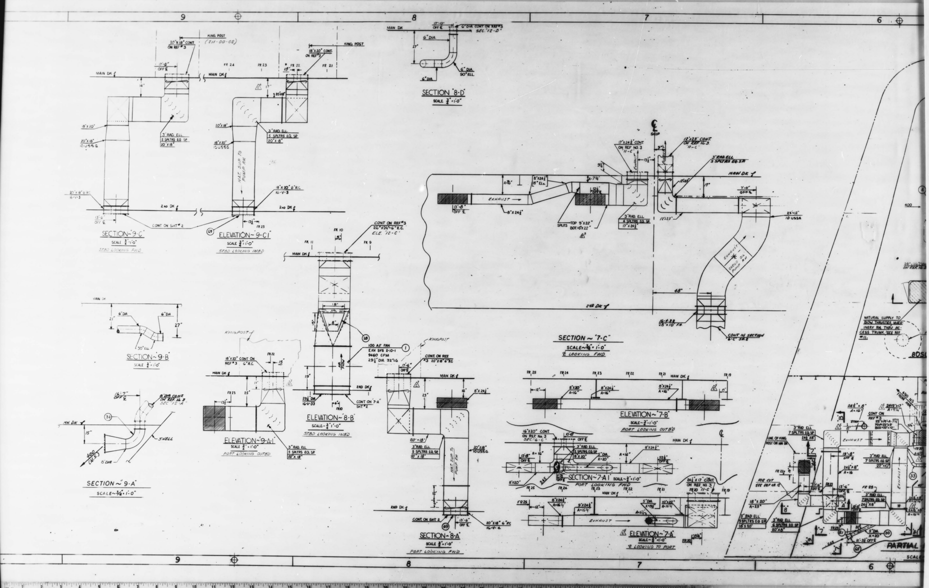
FRAME 2 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-191-21-1

NOV 1980 10X

FRAME 3 OF 4

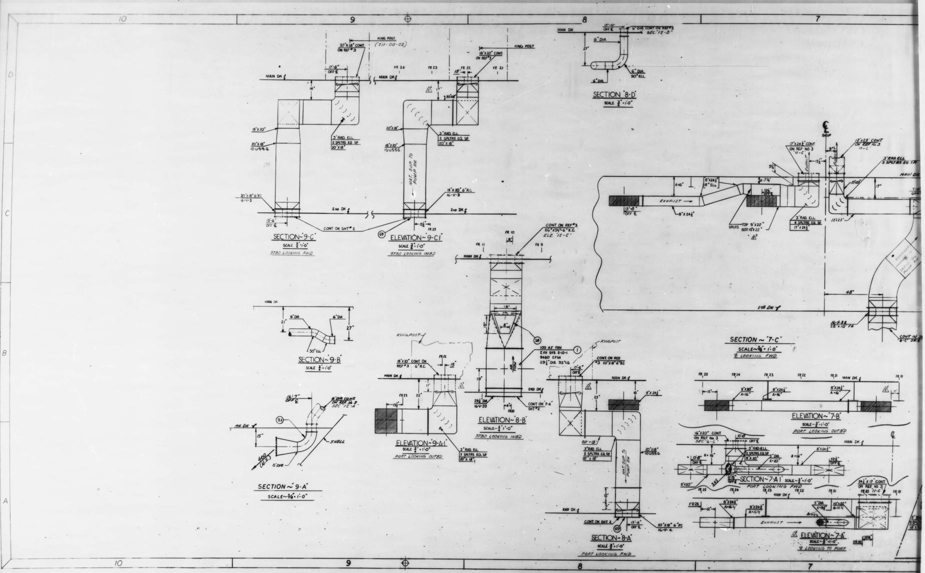

9
8
7
6
SECTION "8-D"
SCALE 3/4"=1'-0"
SECTION~"9-C"
SCALE 3/4"=1'-0"
STBD LOOKING FWD
ELEVATION~"9-C1"
SCALE 3/4"=1'-0"
STBD LOOKING INBD
SECTION~"7-C"
SCALE~3/8"=1'-0"
℄ LOOKING FWD
SECTION~"9-B"
SCALE 3/4"=1'-0"
ELEVATION~"8-B"
SCALE~3/4"=1'-0"
STBD LOOKING INBD
100 AF FAN
EXH SYS 2-10-1
9460 CFM
29 1/4" DIA. 32"LG
ELEVATION~"7-B"
SCALE~3/8"=1'-0"
PORT LOOKING OUTB'D
SECTION~"9-A"
SCALE~3/16"=1'-0"
ELEVATION~"9-A1"
SCALE 3/4"=1'-0"
PORT LOOKING OUTBD
SECTION~"8-A"
SCALE 3/4"=1'-0"
PORT LOOKING FWD
SECTION~"7-A1" SCALE~3/8"=1'-0"
PORT LOOKING FWD
ELEVATION~"7-A"
SCALE~3/8"=1'-0"
℄ LOOKING TO PORT
MAIN DK
2ND DK
EXHAUST
NAT. SUP. TO PUMP RM.
NATURAL SUPPLY TO BOW THRUSTER MACHINERY RM. THRU ACCESS TRUNK (SEE REF. #11)
PARTIAL
9
8
7
6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-191-21-1

NOV 1980 10X

FRAME 4 OF 4


10
9
8
7
D
C
B
A
KING POST (211-00-02)
20"X18" CONT. ON REF #3
17'-6" OFF ℄
MAIN DK ℄
16"
18"X20"
20"X18" 10U.S.S.G.
3" RAD. ELL. 5 SPLTRS EQ. SP. 20"X18"
20"X18" 6"R.C. 16-V-3
2ND DK ℄
13'-6" OFF ℄
CONT. ON SHT #2
SECTION~"9-C"
SCALE 3/4"=1'-0"
STBD LOOKING FWD
KING POST
18"X20" CONT. ON REF #3
FR 24
FR 23
FR 22
FR 21
15"
17"
20"X18"
NAT. SUP. TO PUMP RM
18"X20" 6"R.C. 16-V-3
13½"
(69)
ELEVATION~"9-C1"
SCALE 3/4"=1'-0"
STBD LOOKING INBD
17'-0" OFF ℄
6" DIA. CONT ON REF #3 SEC. "12-D"
6" DIA.
27"
6" DIA. 90° ELL.
SECTION "8-D"
SCALE 3/4"=1'-0"
CONT. ON REF #3 26"X24"-6" R.C. ELE. "12-C"
FR 11
FR 10
FR 9
18"
8"
(28)
100 AF FAN EXH SYS 2-10-1 9460 CFM 29¼" DIA. 32" LG. (1)
AIR FLOW
19"
29¼" DIA 16-V-33
6"
CONT. ON "7-A" SHT #2
ELEVATION~"8-B"
SCALE-3/4" 1'-0"
STBD LOOKING INB'D
6" DIA
21"
30° ELL
SECTION~"9-B"
SCALE 3/4"=1'-0"
KINGPOST
18"X20" CONT. ON REF #3 6" R.C.
11"
25"
FR 23
13½"
3" RAD. ELL. 5 SPLTRS EQ. SP. 20"X18"
ELEVATION~"9-A-1"
SCALE 3/4"=1'-0"
PORT LOOKING OUTBD
16'-7" OFF ℄
8" DIA. CONT. ON REF. No. 3 SEC. "12-A"
(31)
MN. DK ℄
15"
SHELL
400 (N.S.)
8" DIA.
SECTION~"9-A"
SCALE~3/4"=1'-0"
CONT. ON REF #3 20"X18" 6"RC
8"X24½"
20"-18"
3" RAD. ELL. 5 SPLTRS EQ. SP. 20"X18"
20"X18" 10U.S.S.G.
NAT. SUP. TO PUMP RM
12"
CONT. ON SHT. 2
20"X18" 6"RC 16-V-4
SECTION~"8-A"
SCALE 3/4"=1'-0"
PORT LOOKING FWD
℄ SHIP
17"X24½" CONT. ON REF. NO. 3 "11-C"
12"X23" CONT. ON REF. No. 3 "11-C"
3" RAD. ELL 3 SPLTRS EQ. SP.
EXHAUST
A=16"
8"X24½" 15" ELL
A=7¼"
52½" OFF ℄
13½"
9"
17"
12"X23"
13'-8" OFF ℄
8"X24½"
SPLITS TOP 9"X22" BOT. 10"X22"
3" RAD. ELL 4 SPLTRS EQ. SP. 17"X24½"
48"
2ND DK ℄
16-V-32 28"X10" F.O.
CONT. IN "6-C" SH.
EXHAUST CARGO OIL PUMP RM
SECTION ~ "7-C"
SCALE~3/4"=1'-0"
℄ LOOKING FWD
FR 25
8"X20" A=16"
8"X24½" A=16"
FR 19
ELEVATION~"7-B"
SCALE~3/4"=1'-0"
PORT LOOKING OUTB'D
16"X20" CONT. ON REF. No. 3 SEC. "6-C"
10'-10" OFF ℄
3" RAD. ELL. 2 SPLTRS EQ. SP. 8"X20"
5" DIA. X=20"
A=16"
8"X20"
2.45
13'-1" OFF ℄
SECTION~"7-A1" SCALE~3/4"=1'-0"
PORT LOOKING FWD
24½"X17" CONT. ON REF. NO. 3 "11-C"
FR 20
8"X24½" A=16¼"
9"X24½" A=16¼"
5" DIA. X=19½"
10"X22" A=16¼"
A=16¼"
ELEVATION~"7-A"
SCALE~3/4"=1'-0"
℄ LOOKING TO PORT
1'-8¼"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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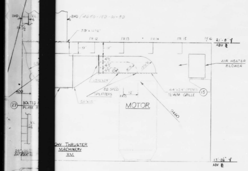
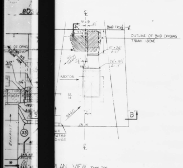
NOV 1980 10X

BUILDERS PLAN NO. M4650-191-21-2

FRAME 1 OF 3

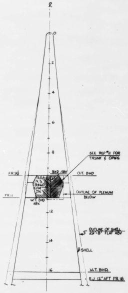

BHD 4650-182-01-02
FR 12
FR 13
FR 14
FR 15
FR 16
21'-8" ABV ℄
AIR HEATER BLOWER
SPLITTERS
MOTOR
9460
BOW THRUSTER MACHINERY RM
13'-8" ABV ℄
BOLTED PLATE

ELEVATION "4-C"
SCALE 3/4" = 1'-0"


℄
BHD FR 9½
OUTLINE OF BHD DIVIDING TRUNK ABOVE
MOTOR
B
9460
℄

PLAN VIEW TANK TOP
FR 16 FWD
SCALE 3/8" = 1'-0"

GENERAL NOTES
1. SEE SHEET #1


℄
2
4
6
8
SEE REF #11 FOR TRUNK & OPNG
FR 9½
BHD ABV
O.T. BHD
N.S. 9460 CFM DN
FR 11
OUTLINE OF PLENUM BELOW
W.T. BHD ABV.
12
OUTLINE OF SHELL 29'-8" FLAT ABV
14
SHELL
W.T. BHD
16
EJ 12" AFT FR 16

PLAN VIEW 21'-8" FLAT
FR. 16 FWD
SCALE 3/8" = 1'-0"

ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	4/21/78	ALL	1-NOTES ADDED TO DRAWING FOR VENTILATION SYSTEM CLARIFICATION.	W.S.	4/24/78
2	8/10/78	5, 7	1-SPOOL 16-V-29 CHG'D FROM 24" TO 26" AFT OF FR 16-PLAN TK TOP, ELEV: 5C + 7B TO SUIT 21 DEPT.	W.S.	
		5	2-SPOOLS 16-V-31 & 32 CHG'D FROM 21" TO 20" AFT FR 16 ON "5-C" TO SUIT 21 DEPT.		
	4/24/79	4, 5	3-REVISED DUCT + EXH. HOOD FOR BOW THRUSTER MOTOR. TO CLEAR ELECT. CABLES + MOTOR HOUSING - AS PER SHOP SK # FP71.		7/24/79
		7	4-RAISED EXH. TERMINAL IN PUMPRM TO SUIT HEADROOM ABV. GRATING	RL	

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN
DATE 9-9-77
DRAWN HMF
APPROVED
TRACED
APPROVED
CHECKED BEM
APPROVED

PLAN NO. M-4650-191-21-2
ALT. NO. 2

HVAC A/D 2ND DECK & BELOW FWD FRAME 45

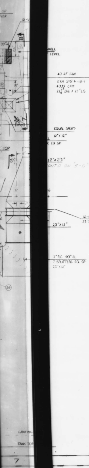
APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	10-6-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

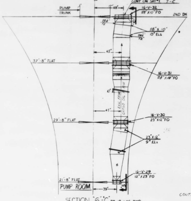
(2) of (2) DRAWINGS

NO.	PLAN NO.	TITLE
		SEE DWG. M-4650-191-21-1

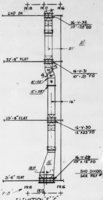
REFERENCE PLANS

M-676

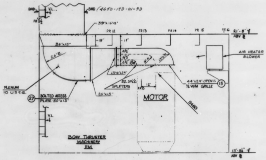

SHELL
LEVEL
40 AF FAN
EXH SYS 4-18-1
4335 CFM
21½ DIA x 25 LG
EQUAL SPLITS
12"x12"
EQ SP
12"x23"
CONT'D ON '5-C'
16-V-29
23"X12" FO
23"x12"
3" R.C. 90° EL
7 SPLITTERS EQ. SP
23"x12"
26
GRATING
TANK TOP
7


G
℄
CONT ON SHT#1 "7-C"
PUMP TRUNK
48"
16-V-32
28"X10" FO
2ND DK
28"X10"
10° ELS
45"
37'-8" FLAT
16-V-31
28"X10" FO
10"
EXH. FROM CARGO OIL PUMP RM
45"
29'-8" FLAT
16-V-30
23"X12" FO
23"X12"
9° ELs
16-V-29
12"X23" FO
21'-8" FLAT
PUMP ROOM
39"

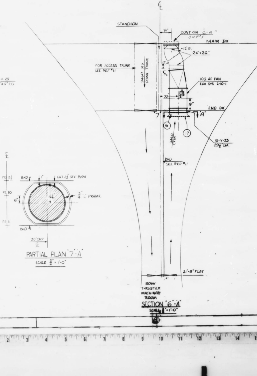
SECTION "6"-C" FR 18 LKG FWD
SCALE 3/8" = 1'-0"


5
FR 18
FR 17
FR 16
2ND DK
16-V-32
10"×28" FO
20"
37'-8" FLAT
16-V-31
10"×28" FO
10"×28"
12"×28"
16"
29'-8" FLAT
16-V-30
12"X23" FO
16-V-29
23"X12" FO
FR 17
1"
21'-8" FLAT
CONT'D ON "7-B"
BHD DIVIDES TRUNK
SEE REF #11

ELEVATION "5"-C"
SCALE 3/8" = 1'-0"

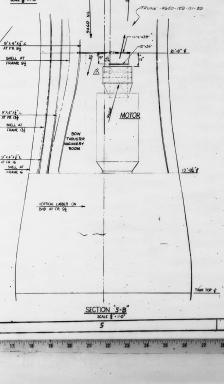

4
BHD
V.L.
FR 9½
BHD (4650-129-01-39
39"x16½"
FR 12
FR 13
FR 14
FR 15
FR 16
21'-8" ℄ ABV ℄
9"
11"
36"x15"
26"R.
4½"
4½"
4½"
9"R.
13½"R.
AIR HEATER
BLOWER
13½"x24"
EQ. SP'C'D.
SPLITTERS
FR 13
12"
44"x24" OPEN'G
½ W/M GRILLE
15
PLENUM
10 U.S.S.G.
27
BOLTED ACCESS
PLATE 30"x13"
26"x15"
MOTOR
9460
V.L.
BOW THRUSTER
MACHINERY
RM
13'-8½" ℄ ABV ℄

ELEVATION "4-C"
SCALE 3/4" = 1'-0"
PORT LOOKING INB'D

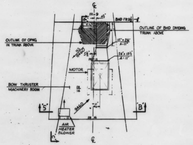

℄
STANCHION
19"
CONT ON "6-A"
SHT#1
MAIN DK
12"R.
24"x26"
FOR ACCESS TRUNK
SEE REF #11
9460 NS
DOWN TRUNK
100 AF FAN
EXH SYS 2-10-1
30"
19"
2ND DK
7
"A"
6
17
9460 CFM
16-V-33
29¼" DIA.
BHD
SEE REF #11
℄
FR 9½
BHD ℄
1"
CUT 2¼" OFF B/M
FR 10
6"
16½"
3/4" L FRAME
FR 11
BHD ℄
30" OFF ℄
21'-8" FLAT
BOW
THRUSTER
MACHINERY
ROOM

PARTIAL PLAN "7"-A"
SCALE 3/4" = 1'-0"

SECTION "6"-A"
SCALE 3/8" = 1'-0"


℄
9460
TRUNK -4650-129-01-39
9460 NS
16½"x39"
15"x36"
9"x4"x½" L
AT FR 9½
SHELL AT
FRAME 9½
21'-8" ℄
9"
4½"
11"
NS
9460
MOTOR
9"x4"x½" L
AT FR 13½
SHELL AT
FRAME 13½
BOW
THRUSTER
MACHINERY
ROOM
9"x4"x½" L
AT FR 16
SHELL AT
FRAME 16
13'-8½" ℄
VERTICAL LADDER ON
BHD AT FR 9½
TANK TOP ℄

SECTION "5-B"
SCALE 3/4" = 1'-0"


℄
FR 9
4½"
BHD FR 9½ ℄
"4"
V.L.
OUTLINE OF BHD DIVIDING
TRUNK ABOVE
OUTLINE OF OPNG
IN TRUNK ABOVE
15"×26"
A=11"
NS
9460
5½"
FR 12
24"x13½"
A=11"
MOTOR
BOW THRUSTER
MACHINERY ROOM
FR 14
"5"
"B"
9460
11"
FR 16
AIR
HEATER
BLOWER
"C"
℄

PLAN VIEW TANK TOP
FR 16 FWD
SCALE 3/8" = 1'-0"

FR 9½
V.L.
N.S.
9460
CFM
DN.
FR 11
W.T. BHD
ABV.

PLAN V
FR
SCAL

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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BUILDERS PLAN NO. M4650-191-21-2

FRAME 2 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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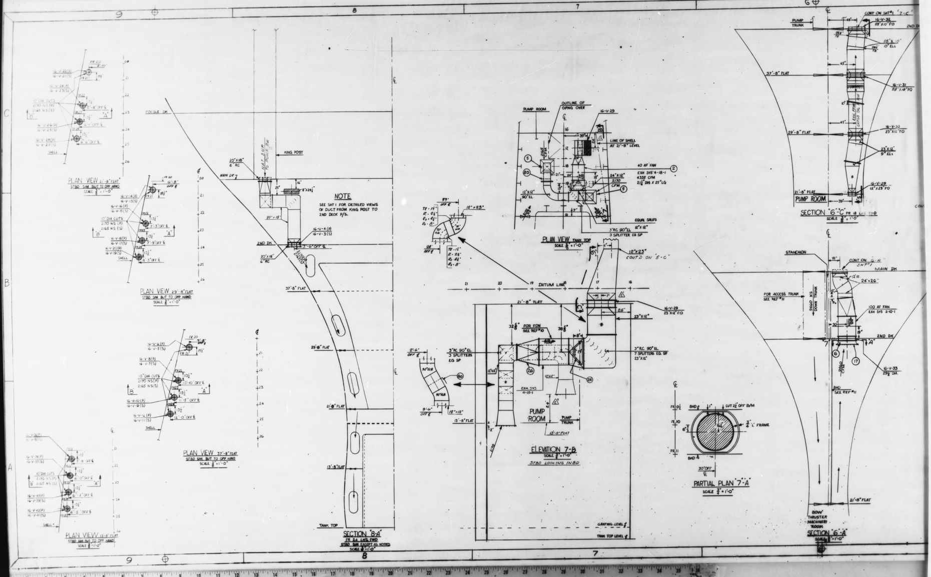
BUILDERS PLAN NO. M4650-191-21-2

FRAME 3 OF 3



PLAN VIEW 21'-8" FLAT
STBD SIM BUT TO OPP HAND
SCALE 3/8"=1'-0"
PLAN VIEW 29'-8" FLAT
STBD SIM BUT TO OPP HAND
SCALE 3/8"=1'-0"
PLAN VIEW 37'-8" FLAT
STBD SIM. BUT TO OPP HAND
SCALE 3/8"=1'-0"
PLAN VIEW 13'-8" FLAT
STBD SIM BUT TO OPP HAND
SCALE 3/8"=1'-0"
10" DIA CUTS
2170 NS (P)
2165 NS (S)
SHELL
NOTE
SEE SHT 1 FOR DETAILED VIEWS OF DUCT FROM KING POST TO 2ND DECK P/S.
KING POST
FOCSLE DK
MAIN DK
2ND DK
37'-8" FLAT
29'-8" FLAT
21'-8" FLAT
13'-8" FLAT
TANK TOP
SECTION "8-A"
FR 24 LKG FWD
STBD SIM EXCEPT AS NOTED
SCALE 3/8"=1'-0"
PUMP ROOM
OUTLINE OF OPNG OVER
LINE OF SHELL AT 21'-8" LEVEL
40 AF FAN
EXH SYS 4-18-1
4335 CFM
EQUAL SPLITS
PLAN VIEW TANK TOP
SCALE 3/4"=1'-0"
CONT'D ON "6-C"
DATUM LINE
ELEVATION 7-B
SCALE 3/4"=1'-0"
STBD LOOKING INBD
PUMP ROOM
PUMP TRUNK
EXH. SYS 4-18-1
GRATING LEVEL
TANK TOP LEVEL
PARTIAL PLAN "7-A"
SCALE 3/4"=1'-0"
3/4" L FRAME
SECTION "6-C"
SCALE 3/8"=1'-0"
PUMP TRUNK
CONT ON SHT#1 "7-C"
STANCHION
CONT ON "6-A" SHT#1
FOR ACCESS TRUNK SEE REF #11
100 AF FAN
EXH SYS 2-10-1
BHD SEE REF #11
BOW THRUSTER MACHINERY ROOM
SECTION "6-A"
SCALE 3/8"=1'-0"
9
8
7
6
C
B
A

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-22

FRAME 1 OF 5

LIST OF MATERIALS FOR ONE SHIP

ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	UNIT WT*	REMARKS	REQ. NO.
1	FAN, CENTRIFUGAL 10CF EXH. SYS. 1-223-3	1	VARIOUS		REF. 1 ITEM NO 83		140		500027
2	, PROPELLER 14PF EXH. SYS. 1-225-1	1			7		55		
3	, 24PF EXH. SYS. 1-224-2	1			8		210		
4	, CENTRIFUGAL 7½CF EXH. SYS. 1-223-2	1			81		84		
5	, 540BL RECIRC. 1-218-1	1			80		820		
6	, 30CF SUP. SYS. 1-223-1	1			82		290		
7									
8									
9	GOOSENECK 17.85# R	2	STEEL		REF. 2 SHT. 34 12"x21"		425		*
10		1			18"x30"	W/CANVAS COVER REF. 5	612		*
11		1			30"x18"		896		*
12	CHOCKS	21#	STEEL		SEE PART PLAN "5-A", SECT. "10-C", EL. "11-A"	FOR GSNKS. ITEM 9, 10 & 11	17.85		*
13	TERMINAL (SPECIAL) 10 GA. PLT.	1	VARIOUS			38⅞" DIA. TO 40" DIA. - 6' LG.	25		*
14	(TYPE N) 13" DIA.	1			REF. 2 SHT. 18		24		*
15	7¾" DIA.	1					5		*
16	SHEET STEEL 16 GA.	160#	STL. GALV.			FOR DUCTWORK	25		*
17	18 GA.	60#					2.0		*
18	HOOD 10.2# R	1	STEEL		20"x12" SEE ELEV. "11-D"		115		*
19		1			21"x14" SEE ELEV. "11-B"		125		*
20		1			25"x30" SEE ELEV. "10-A"		205		*
21		1			15"x10" SEE SECT. "11-C"		45		*
22		1			21"x28" SEE ELEV. "8-B"		145		*
23	½" WM SCREEN 48"x30"-6"R.C.	1	VARIOUS		REF. 2 SHT. 15	#13 U.S. STL. GA.	1.0		504832-B
24	10"x20"	1			15		1.50		
25	WATERTIGHT COVER	2			SHT. 32A 20"x10"	FOR ITEM 18 & 77 HINGE PATTERN #3	21		*
26		1			21"x12"	19 #4	27		*
27		1			25"x30"	20 #5	76		*
28		1			15"x8"	21 #2	28		*
29		1			12"x9"	68 #2	12		*
30		1			32 24¼" DIA.	67	45		*
31		1			24" DIA.	70	47		*
32		1			14¼" DIA.	66	16		*
33		2			32-A 15"x21"	9 HINGE PATTERN #4	34		*
34		1			20"x28"	22 #5	59		*
35									
36	1" IPS PIPE	6 LIN. FT.	STEEL	ASTM-A-53 TY"S" GR.B	SCH. 40	USED FOR PROTECTIVE GUARD	1.6		504844-B
37	LASHING HOOKS (NELSON STUDS)	56	CRES		REF. 2 SHT. 34 PART # B-4L	FOR ITEM 10, 11, & 76			504829-A
38	NUTS HEX	126	STL. GALV.	ASTM-A307 GR.2 ASA B18.2	¼" DIA.	97			504830-D
39		429			⅜"	98 & 99			SUPPLY
40	1" COUPLING	1	FORG. STL	ASTM-A105	3000 # SCR'D HALF	TO INSTALL DEWPOINT SENSOR		AS PER V.I.S. 4650-22-522	SUPPLY
41	DAMPER *PNEUMATIC*	1	VARIOUS		24"x18"			SEE NOTE 96 REF. 13	500047
42	WASHERS	429	STL. GALV.	FF-W-92 TY. A GR. I CL. A	7/16" I.D. x 1" O.D.	FOR ITEM 98 & 99			504830-E
43	FLEXIBLE CONNECTION	1	VARIOUS		REF. 2 SHT 33 13⅜" x 9½"	FOR ITEM 1 ABOVE	47	ISOLATORS ON	*504836-T
44		1			13" DIA		43		*
45		1			8⅛" x 6⅛"	4	29		*
46		1			7¾" DIA.		25		*
47		1			29¼" x 21⅛"	5	105		*
48		1			32⅛" DIA.		92		*
49		1			10⅞" x 12"	6	59		*
50		1			16½" DIA.		52		*
51	FLAT BAR 1" x ¼"	2 L.F.	STL. GALV.		11-A	FOR HANGERS			CUTTINGS
52									
53	SPOOL L=6" 7¾" DIA.	1	STEEL		REF. 2 SHT. 7	MADE FROM PC. NO. 86	8.25		*
54	13"	1					14		*
55	26"x18"-6"R.C.	1				88	35		*
56	30"x48"-	1				89	104		*
57	21"x12" F.O.	2				90	35		*
58	L=11" 14"x15"-3"R.C.	1				88	37		*
59	L=6" 16"x13½"	1					25		*
60	L=9" 22"x30"-6"R.C.	1					50		*
61	COAMING L=3" 12"x9"-3"R.C.	1				87	6		*
62	21"x12"-RECT.	1			REF. 2		15		*
63	L=6" 18"x30"-3"R.C.	1				89	77		*
64	L=3" 20"x10" RECT.	1				87	14		*
65	20"x10"-3"R.C.	1					11		*
66	L=6" 14¼" DIA.	1					19		*
67	L=9" 24¼"	1					53		*
68	L=3" 12"x9" RECT.	1					10		*
69	15"x8"	1					11		*
70	L=6" 24" DIA.	1					35		*
71	L=6" 28"x20"-5"R.C.	1					17		*
72	L=2" 48"x30"-6"R.C.	1					20		*
73	SPOOL L=9" 34"x28"-	1				88	144		*
74	COAMING L=3" 36"x20" RECT.	1				87	24		*
75	SPOOL L=9" 30"x23"-6"R.C.	1				88	81		*
76	COAMING L=5" 48"x30"-	1			W/CANVAS COVER	87	104		*
77	L=3½" 20"x10" RECT.	1			W.T.		14		*
78	½" WM SCREEN 10"x20"	1	STL. GALV.		REF. 2 SHT. 15	#13 AMER. STL. & WIRE GA.	1.50		504832-B
79	12"x21"	1					1.75		
80	8"x15"	1					1.00		
81	36"x20"	1					5.00		
82	30"x23"-6"R.C.	1					4.50		
83							6.00		
84	20"x28"	1					4.00		
85	24" DIA.	1					3.25		
86	SHEET STEEL 7.65 # PLT.	4 SQ.FT.	STEEL		REF. 2 SHT. 7 & 11	FOR SPL'S., FLG'S. & DUCTS			*
87	10.2 #	170			7 & 11				*
88	15.3 #	27			7				*
89	17.85 #	18			7				*
90	20.4 #	4			7				*
91	10 GA.	90			11	PC. 13, FLG'S & DUCT			*
92	GASKET ⅛" THK.	67 SQ.FT.	IMPREG. FELT		11	FOR FLANGES			504824-D
93	DAMPER PNEUMATIC	1	VARIOUS		SIZE 30"x48" (WEATHER)			SEE NOTE 96 REF. 13	500047
94		1			(EXH.)				
95		1			(RECIRC.)				
96									
97	BOLTS, HEX. HD.	126	STL. GALV.	ASTM A-307 ASA B18.2	REF. 2 SHT. 11	¼"-20NC-2 x 1" LG.			504830-D
98		385			11 & 14	⅜"-16NC-2 x 1" LG.			SUPPLY
99		44			FOR FANS	⅜"-16NC-2 x 1¼" LG.			
100	½" WM SCREEN 14¼" DIA.	1			REF. 2 SHT. 15	#13 AMER. STL. & WIRE GA.	1.00		504832-B
101	24¼" DIA.	1					3.25		
102	12"x9"	1					1.00		
103									
104									
105	FIRE DAMPER-MANUAL OPER.	1	VARIOUS	═	3-BLADE LOUVRER TYPE-24"x18"	BETH. STD EF-449-TYPE "L"-MODIFIED			UAO
106		1		═	SINGLE BLADE TYPE -16"x13½"	-EF#531-SHEETS-29			

UAO-50135

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	4/6/78	11	1-42" CMG HEIGHT ADDED TO DET. "11-A" PER U.S.C.G. LTR DATED 3 MARCH 1978 SER: 4105.	W.S.	3/19/78
		3	2-RESERV. DELETED FROM IT. 43-50. NOTE & REQUITION NOs ADDED.		
		6	3-℄ OF EXH. FAN MVD TO 16'-9½ OFF ℄ (P) MAIN DK AT FR. 224 TO AGREE WITH FAN FDN. & DIM. OF SPL 17-V-17 REV. TO SUIT.		
		4	4-COLUMN ADDED TO PENETRATION LIST FOR PC. No. FROM LIST OF MATERIAL.		
		ALL	5-NOTES ADDED TO DWG FOR VENTILATION CLARIFICATION.		
2	8/17/78	10	1-34" CMG HEIGHT INDICATED ON 18"x30" VENT HD - DET. "10-C"	W.S.	
		8	2-SPOOL 17-V-9 CH'GD FROM 9" TO 5" LG ON ELEV. "8-B" TO SUIT SHIPS STRUCT. ON REF. #3.		
		6 & 8	3-RECIRC. FAN # 1-218-1 MVD TO 40 3/16" OFF BHD IN PLAN MAIN DK & DET. "8-B"		
		4 & 8	4-48"x30" DAMPER LOWERED TO X=31½" TO CORRECT IN DET. "8-A". SPOOL 17-V-27 DELETED.		
	11/1/78	4, 6 & 10	5-TRANSITION ADDED 48"x30" SPOOL & DAMPER AT FR. 222 (P) ON PLAN & 10-A. "X"=30" ADDED TO 17-V-4 ON SPOOL LIST.		
		4	6-ON SPOOL 17-V-7 FR. # CH'GD ON PENET. LIST TO AFT OF FR. 223 TO CORRECT.		11/10/78
		4, 10 & 11	7-REMARKS COLUMN ADDED TO PENETRATION LIST. NOTES ADDED TO SPOOLS 17-V-11, 13, 17, 18 & 23 TO CUT SIZE.		
3	2/1/79	6 & 8	1-℄ OF FAN SYS. # 1-218-1 RELOCATED TO 42" AFT OF BHD TO CORRECT ON PLAN MAIN DK & ELEV. "8-B".	W.S.	2/8/79
		2 & 3	2-SIZE OF IT. # 13 ON L/M CHANGED TO CORRECT.		
4	4/27/79	3, 9, 10	1-ADDED ITEMS #105+106 (FIRE DAMP'RS) TO L/M AND TO FIELD OF DWG-- (DRY AIR DUCT + EXH SYS #4-208-1)	RL	7/24/79
		3	2-INCREASE QTY OF ITEM #91 FROM 64 TO 90 FT. THE ABV TO SUIT ALT-3 ON REF #11		
5	2/14/80	3, 6	1-ADDED ITEM #40 TO L/M & LOCATED ON MAIN DK. PLAN AS PER V.I.S. 4650-22-522 DATED 6-28-79.	J.D.	3/11/80

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED
DATE 3-21-77
DRAWN HMF
APPROVED
TRACED
APPROVED
CHECKED R.E.M.
APPROVED

PLAN NO. M-4650-191-22
ALT. NO. 5

HVAC A/D MAIN DECK AFT FR 182

REFERENCE PLANS

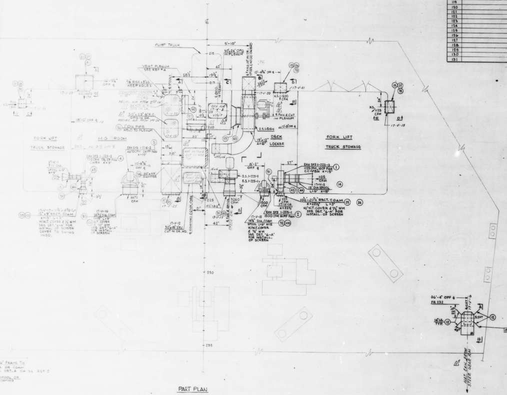
NO.	PLAN NO.	TITLE
14		
13	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURN. MATL.
12	M-4650-231-00-01,06	VERT. LADDERS ABOVE INNER BOTTOM
11	M-4650-111-21-02	HVAC DIAG. MN. DK. AFT FR. 215 2nd DK. & BELOW
10		
9		
8		
7		
6		FDN. FOR HVAC EQUIP. AFT FR. 157
5	M-4650-235-00-02	WEA. CLOTH & COVER LIST
4	M-4650-129-06-19	ENCL. BHD. AFT DK. HOUSE
3	M-4650-191-23-1,2	HVAC A/D 2nd DK. AFT FR. 157
2	EF-531	STD. PLAN AC & VENT CONST. DET. & L/M
1	M-4650-191-15	HVAC FAN LIST

APPROVAL LETTERS

HULL	4650	4651			
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	4-27-77				
A.B.S.	☒				
U.S.C.G.	3-3-78				
LLOYD'S R.S.	☒				
U.S.P.H.S.	4-8-77				

O.D. MARKS	
8/30/78	
2/9/79	

M-677


℄
PUMP TRUNK
5'-10"
30"x24" OPG IN PLENUM
℄ FAN & CUT IN DK. SPOOL & HOOD ON BHD
VENT PLENUM SEE REF #4
⅜" HIGH x 3" LG. WEEPHOLES
DEWPOINT SENSOR
RECIRC. AIR FROM 2ND DK 34"x25" 6" R.C. OPG IN DK.
30"x23" 6" R.C. OPG IN DK. RECIRC. AIR FROM 3RD DK
1" DIA PIPE WELD TO PLENUM
DRY AIR 17-V-3 VENT
AIR INTAKE CUT IN HSE TOP
NAT. SUP. PUMP RM SHAFT
FORK LIFT TRUCK STOWAGE
M G ROOM
DECK LOCKER
FORK LIFT TRUCK STOWAGE
16'-9¼" OFF ℄
18'-6" OFF ℄
17-V-28
N.S. 4670 CFM
N.S. 700 CFM
17-V-18
EXH SYS 1-224-2 4670 CFM 24PF FAN X=19"
EXH SYS 1-223-2 700 CFM 7½ CF FAN CWBR X=9"
17-V-1 7½" DIA. SPOOL L=6" X=9" 700 CFM
10'-4¾" OFF ℄
30"x48" DAMPER
4670 CFM
17-V-17 - 11⅝" x 8⅝" CUT 12" x 9" RECT. COAM X=13" L=3" W/W.T. COVER & ½" WM SEE DET. "6-A" FOR INSTALL. OF SCREEN COVER TO SWING INBD.
17-V-16 24½" DIA. COAM X=19" L=9" W.T. COVER & ½" WM SEE DET. "6-A" FOR INSTALL. OF SCREEN
17-V-12 30"x18" 3" R.C. CUT IN DK. WD.
℄ COAMING & CHK. OVER
17-V-19
℄ FAN & SPOOL
STEER. RM.
3260 CFM
S.S. 1-223-1
E.S. 1-225-1
8'-2" OFF ℄
1500 CFM
17-V-15 14¼" DIA. COAM SPOOL L=6" X=12 W/W.T. COVER & ½" WM SEE DET. "6-A" FOR INSTALL. OF SCREEN
EXH SYS 1-225-1 1500 CFM 14PF FAN
EXH SYS 1-223-3 1125 CFM 10CF FAN CCWBH X=15"
1125 CFM
17-V-2 13" DIA SPOOL L=6" X=15"
1125 CFM 17-V-14 X=22½"
10⅛" x 20⅜" RECT. COAM X=22½" L=3" W/W.T. COVER & ½" WM SEE DET. "6-A" FOR INSTALL. OF SCREEN
10'-4¾" OFF ℄
3425 CFM
17-V-20
17-V-11
N.S. 1500 CFM
℄ FAN & CUT IN PLENUM
E.S. 1-218-1
12'-8" OFF ℄
19"x12" A=6"
N.S. 1125 CFM
17-V-13
17-V-22
17-V-24
17-V-4
17-V-25
42"
21"
215
217
220
225
230
235
36'-4" OFF ℄ FR 232
℄ CUT
17-V-6
14" LG. TYP.
45°
8720-12
NAT. EXH. FROM STEER. GEAR RM
A
B
C
D
8
10
11

PART PLAN
MAIN DECK
SCALE - ⅜" = 1'-0"

LIST OF MATERIALS FOR ONE SHIP

ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	UNIT WT*	REMARKS	REQ. NO.
107									
108									
109									
110									
111	FLAT BAR CLIP	2	STEEL		NELSON CLIP PART NO. 101-084-029	REF. 2, SHT. 11-A			504829-A
112									
113									
114									
115									
116	AUGLE	3 L.F.	STEEL	ABS GR AH	2½" x 2½" x ¼" L				CUTTINGS
117									
118									
119									
120									
121									
122									
123									
124									
125									
126									
127									
128									
129									
130									
131									

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

LIST OF STRUCTURAL PENETRATIONS

COAM ITEM NO.	LOCATION			COAMING				STRUCTURE PENETRATED	DECK	ITEM No.	REMARKS
	FRAME	DISTANCE OFF ℄	HEIGHT	SIZE	R.C.	MATERIAL	LG'TH				
17-V-1	12" FWD FR 224	18'-6" OFF ℄ (P)	X = 9"	7½" DIA.	—	7.65# PL	6"	BHD.	MAIN	86	
17-V-2	12" FWD FR 224	12'-8" OFF ℄ (S)	X = 15"	13" DIA.	—	7.65# PL	6"	BHD.			
17-V-3	3" FWD FR 219	1'-7½" OFF ℄ (S)	—	24" x 18"	6"	15.3# PL	6"	DK.		88	
17-V-4	4" AFT FR 220	16½" OFF ℄ (P)	X = 30"	48" x 30"	6"	17.85# PL	6"	BHD.		89	
17-V-5	22½" AFT FR 232	36'-4" OFF ℄ (P)	—	21" x 12"	F.O.	20.4# PL	6"	DK.		90	
17-V-6	22½" AFT FR 232	36'-4" OFF ℄ (S)	—	21" x 12"	F.O.	20.4# PL	6"	DK.			
17-V-7	11½" AFT FR 221	1'-4½" OFF ℄ (S)	—	14" x 18"	3"	15.3# PL	11"	DK.		88	
17-V-8	12" AFT FR 221	1'-5" OFF ℄ (S)	—	16" x 13½"	3"	15.3# PL	6"	DK.			
17-V-9	14" AFT FR 218	5'-10" OFF ℄ (S)	—	22" x 30"	6"	15.3# PL	5"	DK.			
~~17-V-10~~	~~12" FWD FR 225~~	~~17'-0" OFF ℄ (P)~~	~~X = 13"~~	~~12" x 9"~~	~~3"~~	~~10.2# PL~~	~~3"~~	~~BHD.~~			
17-V-11	12" FWD FR 218	10'-4¾" OFF ℄ (S)	X = 12"	21" x 12"	RECT	10.2# PL	3"	BHD.		87	20⅝" x 11⅝" W/3" R.C. - DET. "11-B"
17-V-12	12" FWD FR 224	1'-9" OFF ℄ (P)	—	18" x 30"	3"	17.85# PL	6"	DK.		89	
17-V-13	12" AFT FR 218	25'-0" OFF ℄ (S)	X = 11"	20" x 10"	RECT	10.2# PL	3"	BHD.		87	19⅝" x 9⅝" W/3" R.C. - DET. "11-D"
17-V-14	12" FWD FR 225	10'-5" OFF ℄ (S)	X = 22½"	20" x 10"	3"	10.2# PL	3	BHD.		—	
17-V-15	12" FWD FR 225	8'-2" OFF ℄ (S)	X = 12"	14¼" DIA.	—	10.2# PL	6"	BHD.		87	
17-V-16	12" FWD FR 225	10'-4¾" OFF ℄ (P)	X = 19"	24½" DIA.	—	10.2# PL	9"	BHD.			
17-V-17	12" FWD FR 225	16'-9½" OFF ℄ (P)	X = 13"	12" x 9"	RECT	10.2# PL	3"	BHD.			11⅝" x 8⅝" W/3" R.C.
17-V-18	12" FWD FR 219	25'-0" OFF ℄ (P)	X = 10"	15" x 8"	RECT	10.2# PL	3"	BHD.			14⅝" x 7⅝" W/3" R.C. - DET. "11-C"
17-V-19	12" FWD FR 225	3'-6" OFF ℄ (S)	X = 24"	24" DIA.	—	10.2# PL	6"	BHD.			
17-V-20	12" FWD FR 218	5'-10" OFF ℄ (S)	X = 20"	28" x 20"	5"	10.2# PL	6"	BHD.			
17-V-21	12" FWD FR 219	3'-3" OFF ℄ (P)	X = 42"	48" x 30"	6"	10.2# PL	2"	BHD.			
17-V-22	11" FWD FR 219	4'-10½" OFF ℄ (P)	—	34" x 25"	6"	15.3# PL	9"	DK.		88	
17-V-23	12" FWD FR 218	16'-9¼" OFF ℄ (P)	X = 23"	36" x 20"	RECT	10.2# PL	3"	BHD.		87	35⅝" x 19⅝" W/3" R.C. - DET. "10-A"
17-V-24	3" AFT FR 220	4'-10½" OFF ℄ (P)	—	30" x 23"	6"	15.3# PL	9"	DK.		88	
17-V-25	12" FWD FR 225	4'-9" OFF ℄ (P)	Y = 36"	48" x 30"	6"	10.2# PL	5"	BHD.		87	
~~17-V-26~~	~~12" FWD FR 226~~	~~10'-5" OFF ℄ (S)~~	~~X = 22½"~~	~~20" x 10"~~	~~RECT~~	~~10.2# PL~~	~~3"~~	~~BHD.~~			
17-V-27	16" AFT FR 222	4'-9" OFF ℄ (P)	X x 30"	48" x 30"	6"	10.2# PL	6"	BHD		87	

RES.

GENERAL NOTES

1. FOR ADDITIONAL GENERAL NOTES & TYPICAL DETAILS SEE REF. 2
2. FOR FAN FDNS. SEE REF. 6
3. FOR LADDER RUNGS & HAND GRABS SEE REF. 12

ITEM	NAME
1	FAN, CENTRIFUGAL 10CF EXH. SYS. 1-223-3
2	, PROPELLER 14 PF EXH. SYS. 1-225-1
3	, 24PF EXH. SYS. 1-224-2
4	, CENTRIFUGAL 7½CF EXH. SYS. 1-223-2
5	, 540BL RECIRC. 1-218-1
6	, 30CF SUP. SYS. 1-223-1
7	
8	
9	GOOSENECK 17.85# PL
10	
11	
12	CHOCKS
13	TERMINAL (SPECIAL) 10GA. PLT.
14	(TYPE N) 13" DIA.
15	7¾" DIA.
16	SHEET STEEL 16GA.
17	18GA.
18	HOOD 10.2# PL
19	
20	
21	
22	
23	½" WM SCREEN 48" x 30" 6" R.C.
24	10" x 20"
25	WATERTIGHT COVER
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	1" IPS PIPE
37	LASHING HOOKS (NELSON STUDS)
38	NUTS - HEX
39	
40	1" - COUPLING
41	DAMPER, PNEUMATIC
42	WASHERS
43	FLEXIBLE CONNECTION
44	
45	
46	
47	
48	
49	
50	
51	FLAT BAR 1" x ¼"
52	
53	SPOOL L = 6" 7¼" DIA.
54	13"
55	24" x 18" - 6" R.C.
56	30" x 48" -
57	21" x 12" F.O.
58	L = 11" 14" x 18" - 3" R.C.
59	L = 6" 16" x 13½"
60	L = 9" 22" x 30" - 6" R.C.
61	COAMING L = 3" 12" x 9" - 3" R.C.
62	21" x 12" - RECT.
63	L = 6" 18" x 30" - 3" R.C.
64	L = 3" 20" x 10" RECT.
65	20" x 10" - 3" R.C.
66	L = 6" 14¼" DIA.
67	L = 9" 24¼"
68	L = 3" 12" x 9" RECT.
69	15" x 8"
70	L = 6" 24" DIA.
71	L = 6" 28" x 20" - 5" R.C.
72	L = 2" 48" x 30" - 6" R.C.
73	SPOOL L = 9" 34" x 25" -
74	COAMING L = 3" 36" x 20" RECT.
75	SPOOL L = 9" 30" x 23" - 6" R.C.
76	COAMING L = 5" 48" x 30" -
77	L = 3½" 20" x 10" RECT.
78	½" WM SCREEN 10" x 20"
79	12" x 21"
80	8" x 15"
81	36" x 20"
82	30" x 23" - 6" R.C.
83	
84	20" x 28"
85	24" DIA.
86	SHEET STEEL 7.65# PLT.
87	10.2#
88	15.3#
89	17.85#
90	20.4#
91	10 GA.
92	GASKET ⅛" THK.
93	DAMPER PNEUMATIC
94	
95	
96	
97	BOLTS, HEX. HD.
98	
99	
100	½" WM SCREEN 14¼" DIA.
101	24¼" DIA.
102	12" x 9"
103	
104	
105	FIRE DAMPER - MANUAL OPER.
106	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-22

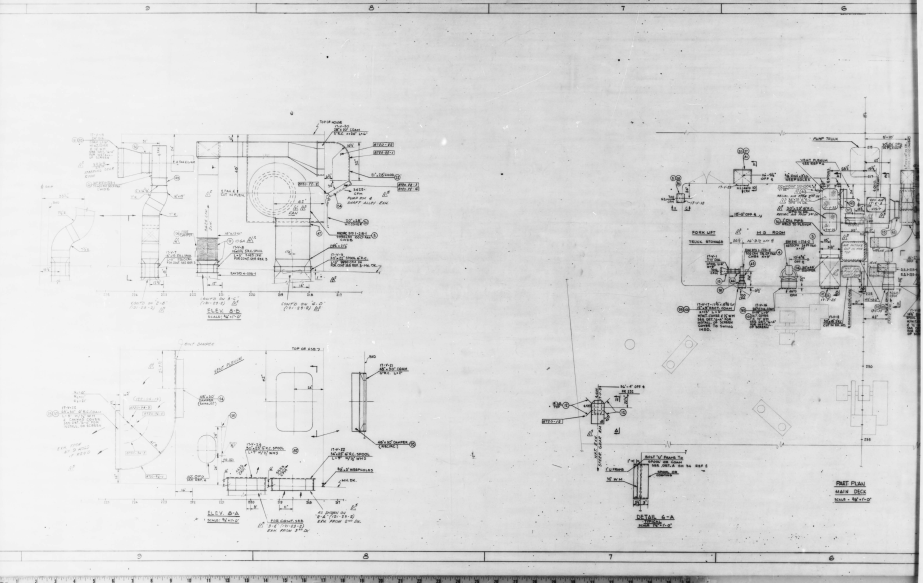
FRAME 2 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-22

FRAME 3 OF 5


9
8
7
6
TOP OF HOUSE
FAN
ELEV. 8-B
SCALE: 3/4"=1'-0"
TOP OF HSD 7
VENT PLENUM
ELEV. 8-A
SCALE: 3/4"=1'-0"
DETAIL 6-A
TYPICAL
SCALE 1 1/2"=1'-0"
PUMP TRUNK
VENT PLENUM
FORK LIFT
TRUCK STOWAGE
M G ROOM
PART PLAN
MAIN DECK
SCALE - 3/8"=1'-0"

AUTOMATION INDUSTRIES, INC.
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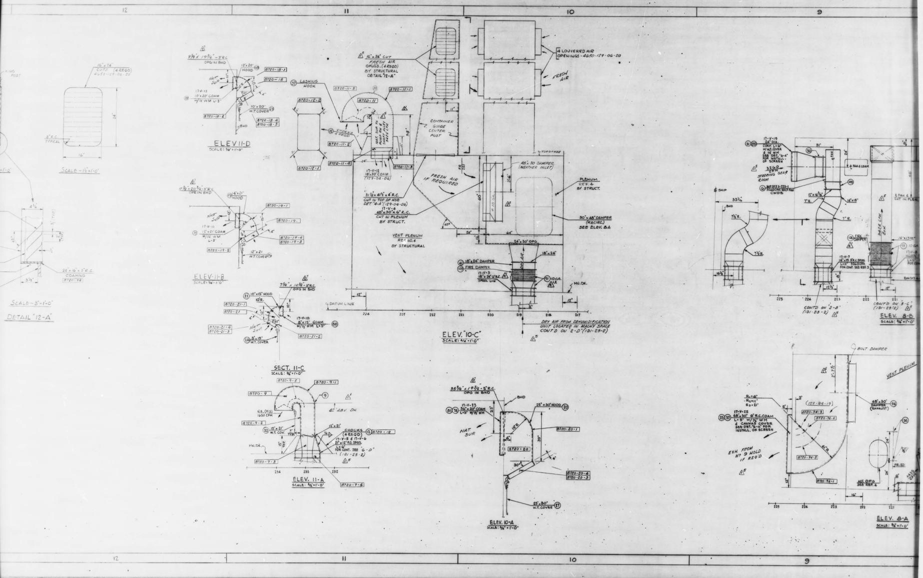
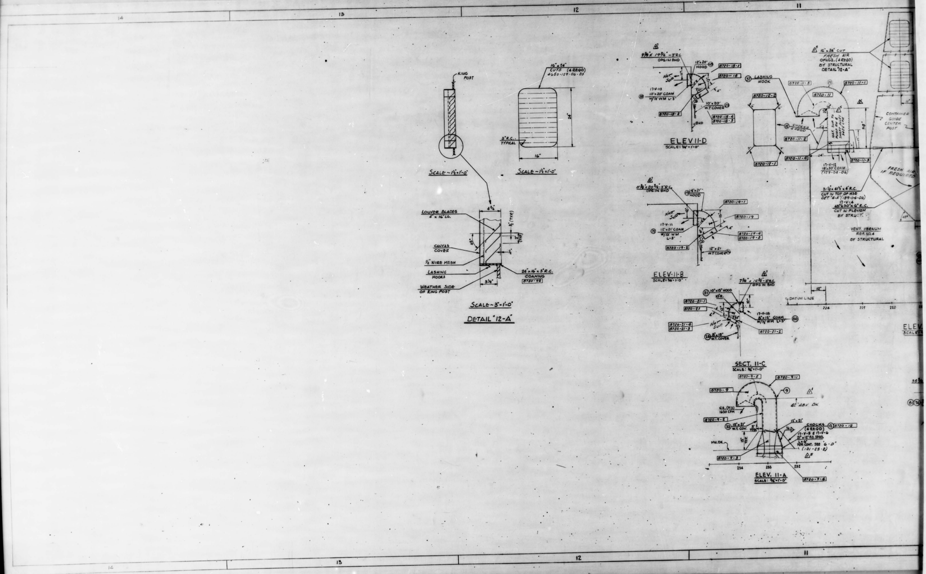
BUILDERS PLAN NO. M4650-191-22

FRAME 4 OF 5



12
11
10
9
DETAIL "12-A"
SCALE-3"=1'-0"
SCALE-1½"=1'-0"
16" x 24" CUTS (4 REQD) 4650-129-06-20
ELEV 11-D
SCALE: ¾"=1'-0"
ELEV-11-B
SCALE: ¾"=1'-0"
SECT. 11-C
SCALE: ¾"=1'-0"
ELEV. 11-A
SCALE: ¾"=1'-0"
LASHING HOOK
16" x 24" CUT FRESH AIR OPNGS. (4 REQD) BY STRUCTURAL DETAIL "12-A"
4 LOUVERED AIR OPENINGS - 4650-129-06-20
FRESH AIR
CONTAINER GUIDE CENTER POST
FRESH AIR IF REQUIRED
48" x 30" DAMPER (WEATHER INLET)
PLENUM REF 4 BY STRUCT.
30" x 48" DAMPER (RECIRC) SEE ELEV. 8A
VENT PLENUM REF NO. 4 BY STRUCTURAL
24" x 30" OPG
18" x 24" DAMPER
FIRE DAMPER
DATUM LINE
DRY AIR FROM DEHUMIDIFICATION UNIT LOCATED IN MACH'Y SPACE CONT'D ON "2-D" (131-23-2)
ELEV. "10-C"
SCALE: ¾"=1'-0"
ELEV. 10-A
SCALE: ¾"=1'-0"
25" x 30" HOOD
25" x 30" W.T. COVER
NAT. SUP.
STEERING GEAR ROOM
CONT'D ON "2-B" (131-23-2)
CONT'D ON "3-C" (131-23-2)
ELEV. 8-B
SCALE: ¾"=1'-0"
BOLT DAMPER
VENT PLENUM
48" x 30" DAMPER (EXHAUST)
EXH. FROM No. 9 HOLD IF REQ'D
ELEV. 8-A
SCALE: ¾"=1'-0"


14
13
12
11
KING POST
SCALE ~ 1½"=1'-0"
16" x 24"
CUTS (4 REQD)
4650-129-06-20
24"
3" R.C.
TYPICAL
16"
SCALE ~ 1½"=1'-0"
4¾"
LOUVER BLADES
4" x 16" LG.
½" (TYP.)
2" (TYP.)
45°
CANVAS COVER
½" WIRE MESH
½"
LASHING HOOKS
WEATHER SIDE OF KING POST
3½"
26" x 16" x 3" R.C.
COAMING
8720-92
SCALE ~ 3"=1'-0"
DETAIL "12-A"
9¾" x 19¾" - 3" R.C.
OPG IN BHD
12" x 20" HOOD
18
8720-18-1
8720-18
NAT. SUP.
17-V-13
10" x 20" COAM
W/1½" WM L-3"
78
10" x 20" W.T. COVER
29
8720-18-2
8720-18-4
8720-18-3
BHD
4"
ELEV 11-D
SCALE: ¾" = 1'-0"
37
LASHING HOOK
8720-12-2
6"
9"
8720-12-1
12
CHOCKS 4 REQD
8720-11-5
11
8720-11-1
8720-11
NAT. SUP. TO PUMP RM & SHAFT ALLEY 3426 CFM
8720-11-2
8720-11-4
8720-11-3
24"
34"
15"
17-V-12
18" x 30" COAM
(129-04-06)
16" x 24" CUT
FRESH AIR OPNGS. (4 REQD)
BY STRUCTURAL
DETAIL "12-A"
11"
CONTAINER GUIDE CENTER POST
FRESH AIR IF REQUIRED
31⅛" x 41½" x 4" R.C.
CUT IN TOP OF HSE
DET. "4-A" (189-04-06)
17-V-4
48" x 30" x 6" R.C.
CUT IN PLENUM
BY STRUCT.
45°
VENT PLENUM
REF. NO. 4
BY STRUCTURAL
11⅝" x 20¾" - 3" R.C.
OPG IN BHD
19
14" x 21" HOOD
8720-19-1
8720-19
NAT. SUP.
17-V-11
12" x 21" COAM
W/1½" WM L-3"
79
8720-19-4
8720-19-3
8720-19-2
12" x 21 W.T. COVER
26
ELEV-11-B
SCALE: ¾" = 1'-0"
7⅜" x 16⅜" - 3" R.C.
OPG IN BHD
21
10" x 15" HOOD
10" R.
8720-21-1
8720-21
17-V-18
8" x 15" COAM
W/1½" WM L-3"
80
8720-21-4
8720-21-3
NAT. SUP.
8720-21-2
28
8" x 15" W.T. COVER
SECT. 11-C
SCALE: ¾" = 1'-0"
12"
DATUM LINE
224
225
222
ELEV.
SCALE
8720-9-5
8720-9-1
8720-9
9
42" ABV DK
N.S. (P/S)
1630 CFM
8720-9-2
33
15" x 21" W.T. COV.
5" TYP.
12" x 21"
CHOCKS (4 REQD)
12
8720-12
17-V-5 & 17-V-6
21" x 12" F.O. SPOOL
L=6"
FOR CONT. SEE "6-D"
(191-23-2)
MN. DK.
15" TYP.
8720-9-3
8720-9-4
234
233
232
ELEV. 11-A
SCALE: ½" = 1'-0"
35⅝
81
74

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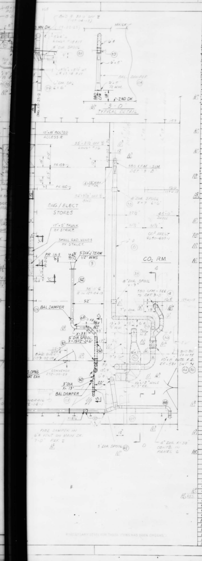
FRAME 5 OF 5



LIST OF MATERIALS FOR ONE SHIP

ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	WT.	SOURCE	REQ'N NO.
1	TERMINAL (TYPE J) 3" DIA.	2	STL GALV.	COMM'L.	7½ SLOPE - #22 USS. GA.	½ W.M. #13 USS. GA.		JUNIPER INDUST.	504858-K
2	4"	1			- 5.1 # PL				
3	5"	2			- #22 USS. GA.				
4	6"	3			- 5.1 # PL.				
5	1/4" FLAT HD. MACH. SCREW	90	STL. GALV.		REF 1 SHT. 11	20-NC-2A L= 3/8"			504830-AB
6	TERMINAL GUARD	—	STEEL		DET. "9-A" SHT. 2 OF 2	ORDER AS ITEMS # 7 & 8			UAO
7	1" DIA. ROD	160 LF	STEEL	ABS GR. A		FOR TERMINAL GUARDS DET. 9-A			
8	1½" X ½" FLAT BAR	45 LF							
9	DAMPER SLIDE	7.5 #	STL. GALV.	A525					
10	BOLTED ACCESS PLATE 8"X8"	4	VARIOUS		REF. #1 SHT. 23	MAKE FROM P.C. #77, 48 & 68			
11	8"X7"	2							
12	6"X6"	2							
13	SPOOL	1	STEEL	A53 TY.S GR. B	REF 1 SHT. 7 6 DIA. L=6	ORDER AS ITEM 86			
14		1			8" DIA	134			
15		1			4" DIA	84			
16	15.3 PL	1		ABS GR.A	7" DIA.	79			
17	30.6	1			15"X7" F.O.	81			
18	12.75	4			15"X8" F.O.	78			
19	12.75	1			5"X4" F.O.	78			
20	12.75	1			8"X4" F.O.	78			
21		1		A53 TY.S GR.B	8" DIA.	134			
22	12.75	3		ABS GR.A	9"X4" F.O.	78			
23	12.75	3			9"X5" F.O.	78			
24	12.75	2			15"X8½" F.O.	78			
25		1		A53 TY.S GR.B	8" DIA.	134			
26	15.3			ABS GR.A	30"X15" 6" R.C.	79			
27	30.6	2			18"X9" F.O.	81			
28	#10 USSG	3		A569	5" DIA.				UAO
29	½" W.M. SCREEN 4" DIA.	1	STL GALV	COMM'L.		#13 AMER. STL. & WIRE GA			504832-D
30	SPOOL	6	STEEL	A53 TY.S GR.B	5" DIA L=6	ORDER AS ITEM 85			UAO
31	20.4 PL	1		ABS GR.A	35"X20" 6" R.C.	80			
32	10.2	1			24"X18" 6" R.C. L=10	49			
33	10.2	1			16"X13½" 3" R.C. L=9"	49			
34	20.4	1			20"X10" 3" R.C. L=11"	80			
35	15.3	1			15"X10" 3" R.C. L=6"	79			
36	30.6	2			21"X12" F.O. L=4"	ORDER AS ITEM #81			
37	10.2	1			13"X9" F.O. L=6"	ORDER AS ITEM # 49			
38	8" DIA. STD. PIPE (2 REQ'D)	1 LIN. FT.		A53 TY.S GR.B	8" DIA.				504844-T
39	6"				6" DIA.	ORDER AS ITEM # 86			UAO
40	15.3 PL	1		ABS GR.A	15"X8½" F.O.	79			
41	20.4	1			30"X15" 6" R.C.	80			
42		3		A53 TY.S GR.B	3" DIA	83			
43									
44	AUTO FIRE DAMPER 10"x8"	1	VARIOUS		REF 1 SHEET 31				
45									
46	SPOOL 20.4 PL.	1	STEEL	ABS GR.A	REF 1 9"X5" F.O. L=6	ORDER AS ITEM 80			
47		2		A53 TY.S GR.B	6" DIA.	86			
48	SHEET STEEL 7.65 # PL	3766 #	STEEL	ABS GR.A		FOR DUCT WORK			
49	10.2 # PL	2136 #							
50	#10 USSG	60 #	STL. GALV.	A525					
51	SPIRAL CONDUIT PIPE 6" DIA.	87 LF	STL. GALV.	A526	UNITED SHEET METAL CO.	FOR DUCT WORK		#22 USS. GA.	504844-S
52	5"	29 LF							
53	4"	3 LF							
54	3"	5 LF							
55	½" W.M. SCREEN 20"X35" 6" R.C.	1		COMM'L.	REF. #1	#13 AMER STL. & WIRE GA			504832-D
56	25"X34" 6" R.C	1							
57	9"X7½" F.O.	1							
58	9"X13" F.O.	1							
59	7"X3 3" R.C.	1							
60	21"X12" F.O.	3							
61	5½"X3½"	36							
62	FLAT BAR 1"X 1/8"	43 L.FT.		ABS-GR.A	REF 1. SHT. 11 & 14	FOR BUTT STRAPS & HANGERS			
63	SHEET METAL #10 U.S.S.G.	5 #		A525	1, 11				
64	SPIRAL CONDUIT 6" DIA. 90° ELBOW	8	STL. GALV.	A526	TYPE E-90-1	UNITED SHEET METAL CO.		#22 USS. GA.	504844-S
65	5"	2							
66	4"	2							
67	3" DIA. 45°	1			E-45-1				
68	3/8" HEX. HD. BOLT	142	STL. GALV.	A307 GR.B	16NC-2A 5/8" LG.				504830-AB
69	SPIRAL CONDUIT 6" DIA. 45°	4	STL. GALV.	A526	TYPE E-45-1	UNITED SHEET METAL CO.		#22 USS. GA.	504844-S
70	6" 22½°	2			E-22-2				
71	TERMINAL (TYPE J) 6" DIA.	1	VARIOUS		REF. #1 SHT. 18				504858-K
72	BALANCE DAMPER (TYPE II)				REF #1 6" DIA.				
73	SHEET STEEL 16 U.S.S.G	110 #	STL. GALV.	A525		FOR DUCTWORK			
74	20	70 #							
75	22	15 #							
76	24	10 #							
77	GASKET 1½"x1/8" CHROMELOCK	800 LF	FELT	COMM'L.	IMPREGNATED	FOR FLANGES			504824-V
78	SHEET STEEL 12.75 # PL	29 #	STEEL	ABS. GR.A		FOR SPOOLS			
79	15.3 # PL	22 #							
80	20.4 # PL	30 #							
81	30.6 # PL	16 #							
82	10.2 # PL	335 #				& FLANGES			
83	3" DIA. STD PIPE	1 LIN. FT	STEEL	A53 TY.S GR.B	SCH. 40 ASTM-A53 SEAMLESS	FOR SPOOLS		ANSI B36.10	504844-T
84	4"	6" LG							CUTTINGS
85	5"	33 LIN. FT				& DUCTWORK			504844-T
86	6"	3 LIN. FT							
87	BAL DAMPER TYPE II	1	VARIOUS		REF #1 3" DIA				
88		2			4"				
89		1			5"				
90	SPIRAL CONDUIT REDUCING LATERAL	1	STL. GALV.	A526	TYPE L-1R A=6, B=5, C=3	(FOR DUCTWORK) UNITED SHT. METAL		#22 USS. GA.	504844-S
91	BAL DAMPER TYPE II	1	VARIOUS		REF. #1 8"X6½"				
92	FLAT BAR 1"X ¼"	64.5 LF	STEEL	ABS GR.A		FOR HANGERS			
93	FLAT BAR 1"X 3/8"	31.3 L.F.	STEEL						
94	NELSON STUDS	270	VARIOUS	COMM'L.	101-084-029				[illegible]
95	~~NELSON STUDS~~		~~VARIOUS~~		~~A 101-501-786~~				[illegible]
96	3/8" HEX HD BOLT	2377	STL. GALV.	A307 GR.B	16NC-2 1¼" LG	& FLANGES			504830-AB
97	3/8 DIA. HEX. NUTS	3046	STL. GALV.		16NC-2				
98	3/8" DIA HEX. BOLT	669	STL. GALV.		16NC-2 1" LG	FLANGES			
99	¼" DIA HEX BOLT	32	STL. GALV.		20NC-2 3/4" LG				
100	¼" DIA. HEX NUTS	32	STL. GALV.		20NC-2				
101	DUCT SEALG BAND / HEAT SHRINKABLE	6	POLYOLEFIN		3" DIA.	REF. 1 SHT. 13		RAYCHEM CORP. P/N TDB-3-4	504846-E
102		4			4" DIA.			TDB-4-4	
103		19			5" DIA.			TDB-5-4	
104		35			6" DIA.			TDS-6-4	
105	CONTINUED IN PANEL 10 & 11 SHT. NO. 2								

NO	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
2	4/14/78	5	8-5" ⌀ PIPE RELOCATED TO 6" AFT FR. 166 (S) 38'-10½ OFF ℄ ON PLAN "5-C" TO CLEAR DRAIN PIPE. ELE 5-D CHG'D.	W.S.	5/2/78 Aja
		3 & 5	9-5" ⌀ SP'L ADDED TO BHD 12" FWD OF FR. 168 (S) 33'-10" OFF ℄ ON PLAN 5-C. ELE. "5-D" CHG'D. IT. 30 INCR. FROM 5 TO 6.		
		3 & 5	10-3" ⌀ SP'L ADDED TO BHD ON FR. 169 (S) 33'-6" OFF ℄ ON PLAN "5-C". ELEV. "5-D" CHGD. IT 42 INCR. FROM 2 TO 3.		
		3	11-L/M CHGS: ITS #14, 21 & 25 CHGD TO 8" STD PIPE (IT. 134 SHT 2) IT. 47 CHGD TO 6" STD PIPE IT. 86 INCR. FROM 2' TO 3' LIN. FT. IT. 94 INCR. FROM 172 TO 270 IT. 95 DELETED.		
3	7/20/78	3	1-7" DIM. ADDED TO 6" ⌀ DK SPOOL IN CO₂ RM (S) AFT OF FR. 165	W.S.	8/4/78 Aja
		4	2-NOTE ADDED TO 6" ⌀ VENT ON "5-C" INDICATING FIRE DAMPER IN "MAIN" DK PASS. 2ND DK (S) FR. 168-169.		
4	12/18/78	3 & 4	1-18"x7" VENT RAISED TO A=5" FOR ADDITION OF 13"x9" F.O. SPOOL. CO₂ RM (S) FR. 166-168. "4-D" REVISED TO SUIT.	W.S.	1/18/79 Aja
		9 & 11	2-18"x9" SPOOL RELOCATED 40'-9⅜ TO 40'-10⅞" OFF ℄ & 17" AFT FR. 194 (P & S) ON PLAN "11-B". DET "9-A" & "11-A" CHG'D. TO SUIT.		
		3	3-CUT FOR 13"x9" VENT INCR TO 16"x12" IN LONG'L BHD 38'-0" OFF ℄ (S) FR. 168-169 IN VOID SPACE ON PLAN "5-C".		
		3	4-5" ⌀ VENT MOVED 29" TO 33" INBD OF LONG'L BHD (S) FR. 166 ON PLAN "5-C"		
		5	5-VENTS REVISED ON PLAN "5-C" (P) FRS 157-166 - ℄ OF SHIP TO 35'-3½" LONG'L BHD.		
5	FEB. 14 79	4	1-CORRECT FITTING NO. ADDED TO 5" DIA. VENT 29½" AFT OF FR. 167 AT ℄ SHIP ON PLAN "5-C."		
		10	2-LOWERED 30x15" DUCT BETWEEN FRS "190-193" STBD SIDE. TO CLEAR HATCH COVER MECHANISM. PLAN "11-B"		
		7	3-RELOCATED 5½"x3½" DUCT. FRS "178-179." STBD SIDE. TO CLEAR CABLES. PLAN "8-B."		
		12	4-LOWERED 11½"x6" DUCT. BETWEEN FRS "186-191." PORT SIDE TO CLEAR HATCH COVER MECHANISM. PLAN "11-B"	R.L.	
	4/4/79	3	5-INCREASED LENGTH OF PL #34 TO SUIT ALT NO. 3 - REF. 17	R.L.	
	8/6/79	12	6-REVISED SUPP. DUCT 10½"x5½" BET'N FR. 181-186 PORT SIDE TO CLEAR STL ROPE CABLE PLAN 11-B & ELEV 11-D		
		10	7-REVISED SUPP. DUCT 9"x6" BET'N FR 181-186 STBD SIDE TO CLEAR STL ROPE CABLE PLAN "11-B"	J.D	8/23/79 Aja

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	12/14/77	3 & 4	1-6" VENT M'VD TO CLEAR ADDED BOTTLES IN CO₂ RM (S) AFT OF FR. 165. "4-D" REVISED. VENT CUTS INDICATED AT FR. 166-168 IN VOID SPACE.	W.S.	1-10-78 Aja
		3	2-IT. 76 DELETED PER USCG LTR 9/7/77 #4582		
		3	3-6" VENT M'VD FROM 9" TO 12" OFF LONG'L IG @ FR 159 (S) IN CO₂ RM.		
		3	4-CHG'D VENTS TO #10 GA. IN VOID SPACE FROM CO₂ RM (S) FR. 165-169 ON PLAN "5-C". "4-D" REVISED TO SUIT. 10"x8" F.D. ADDED. THIS IT. PER USCG LTR 10/3/77 #4741		
		7 & 9	5-6" EXH. TERM. RELOCATED IN F.O. FILL. STA. TO CLEAR PIPES ON PLAN "8-B" (P) FR. 172-173 "7-A" REVISED TO SUIT.		
		ALL	6-NUMERICAL CAPTIONS ADDED TO PRINCIPLE VIEWS.		
		3 & 6	7-SUP. & EXH. VENTS CH'GD IN F.O. FILL. STA. TO CLEAR PIPES ON PLAN "8-B" (S) FR. 172-173. VENT SHOWN ON "5-C."		
		10	8-30x15" VENT RELOCATED TO 15'-8½" OFF ℄ TO AGREE WITH REF #4. PLAN "11-C" (S) FR. 181-182		
		3	9-IT. 39 INCR FROM 1 TO 2 IT. 44 ADDED TO L/M IT. 82 INCR FROM 215 TO 335.		
2	4/24/78	4	1-21x12 F.O. CUT MVD INBD TO 21'-0⅛ OFF ℄ (S) ON BHD 24" AFT FR. 167 ON PLAN "5-C." (21 DEPT REQ.)	W.S.	
		5	2-REVISE CUT IN 2ND DK, 24'-3" OFF ℄ (S) 15" FWD FR. 164 TO 16x26 ON PLAN "5-C" AS SHOWN ON "13-B" (SHT 2) REVISE 12-C TO SUIT. (21 DEPT.)		
		11	3-SP'L AT FR. 186 (S) 38'-10¾" OFF ℄ CHG'D TO 8" ⌀ PIPE ON PLAN "11-B" "X" CHG'D TO 22". ELE "8-D" CHG'D TO SUIT ON SHT 2. (21 DEPT. REQ.)		
		11	4-SP'L AT FR. 181 (S) 38'-10¾" OFF ℄ CHG'D TO 8" ⌀ PIPE ON PLAN "8-B" "X" CHG'D TO 22". ELE. "8-D" CHGD TO SUIT ON SHT 2. (21 DEPT. REQ.)		
		8 & 11	5-9"x5" SPL (P) FR. 181 "X" DIM. CHG'D TO 23" ON PLAN "8-B". ELEV "11-D" CHG'D TO SUIT. (21 DEPT REQUEST)		
		3, 4 & 5	6-EXH. VENT RISER CHG'D TO 6"x5" IN CO₂ RM (S) FR. 165 TO CLEAR RELOCATED CO₂ BOTTLES ON PLAN "5-C". DETS "3 & 4-D" REVISED.		
		5	7-EXH. VENT RISER CHG'D TO 6"x5" IN CO₂ RM (S) FR. 159 AT LONG'L BHD ON PLAN "5-C" TO CLEAR RELOCATED CO₂ BOTTLES.		

(CONTINUED)

~GENERAL NOTES~

1- FOR ADDITIONAL GENERAL NOTES AND TYPICAL DETAILS SEE REF NO. 1.
2- ALL HORIZONTAL DUCTWORK IN CARGO HOLD NO. 9 TO BE FABRICATED OF 7.65# RATE.
3- ALL VERTICAL DUCTWORK IN CARGO HOLD NO. 9 TO BE FABRICATED OF 10.2# RATE.
4- FOR SUPPLY TERMINAL GUARDS AND BALANCING ARRGT. OF S.S. 1-218-1 SERVING CARGO HOLD NO. 9 SEE DET "9-A" SHEET 2 OF 2.
5- ALL ELBOWS TO BE FULL THROAT RADII UNLESS OTHERWISE NOTED.
6- HANGERS INDICATED THUS ⊏|⊐ SHALL BE SPACED A MAXIMUM OF 8' APART SEE REF. NO. 1 SHEET 14 & 15.

UAO-50135-M

REFERENCE PLANS

NO.	PLAN NO.	TITLE
17	M4650-191-23-1	HVAC A/D 2ND DECK AFT. FR. 157
16	M4650-129-14-5	FDN FOR HVAC EQUIP. AFT FR 157
15	M4650-191-11-2	HVAC A/D MACHY. SPACE PLAN & L/M
14	EF-449	ADJUSTABLE LOUVRE DAMPER
13	M4650-191-18-1	HVAC UPPER DK.
12	M4650-191-19-1	HVAC A/D MN DK FR 157-182
11		
10	M4650-191-5	HVAC FAN LIST
9	M4650-232-00-22	ENG. & ELEC. STORES
8	M4650-402-3	CARGO REFRIG. PIPING
7	5533-S27-1 2 ALT	ON DK GUIDE SYSTEM AT HOLD NO. 8
6	M4650-232-00-42	BATTENS & WALKWAY ARRG'T.
5	-212-00-05	RIGGING ARRG'T. HINGED HATCH COVERS
4	M4650-191-24-1,2	HVAC A/D 3RD. DK. & BELOW AFT FR. 182
3	-191-22	HVAC A/D MN. DK. AFT. FR. 182
2	-191-19-1,2	HVAC A/D MN. DK. FR. 157 182
1	EF-531	STD. PLAN. A/C & VENT CONST. DET. & LM

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" & AS NOTED
DATE 8-26-77
DRAWN B.R.
APPROVED
TRACED
APPROVED
CHECKED B.E.M.
APPROVED W.B.Jr.

PLAN NO. M4650-191-23-1
ALT. NO. 5

HVAC A/D
2ND DECK
AFT FR. 157

APPROVAL LETTERS					
HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	9-29-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.	9-9-77				

(1) OF (2) DRAWINGS

M-678

ALTERATION
ENGINEERING DISTRIBUTION
OWNERS
AMERICAN BUREAU
LLOYD'S R.S.
U.S.M.A.
U.S. NAVY
U.S.C.G.
JOINER CONTR.
OWNER'S INSP.
AM. BU. INSP.
LLOYD'S INSP.
U.S.M.A. INSP.
U.S. NAVY INSP.
U.S.C.G. INSP.
HULL DRAFT
MACH. DRAFT
ELEC. DRAFT
OUTFIT DRAFT
ESTIMATING
PRODUCTION
ORDER DEPT.
JOINER CONTR.
TOTAL ENG'G DIST.
YARD DISTRIBUTION
PIECE RATE
TEST DEPARTMENT
GROUND ASSEMBLY
STRUCT. SUPER.
WET DOCK
PIPE SHOP
PIPE DRAFT
BOILER SHOP
ELECTRIC SHOP
SHEET MET. SHOP
COPPER SHOP
PAINT SHOP
WELDING
MOLD LOFT
BRACKET SHOP
TOTAL YARD DIST.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-23-1

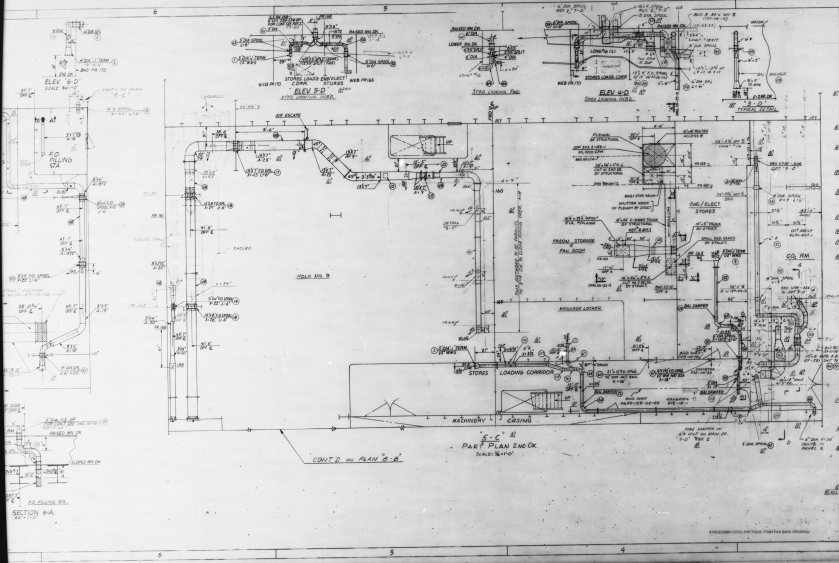
FRAME 1 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

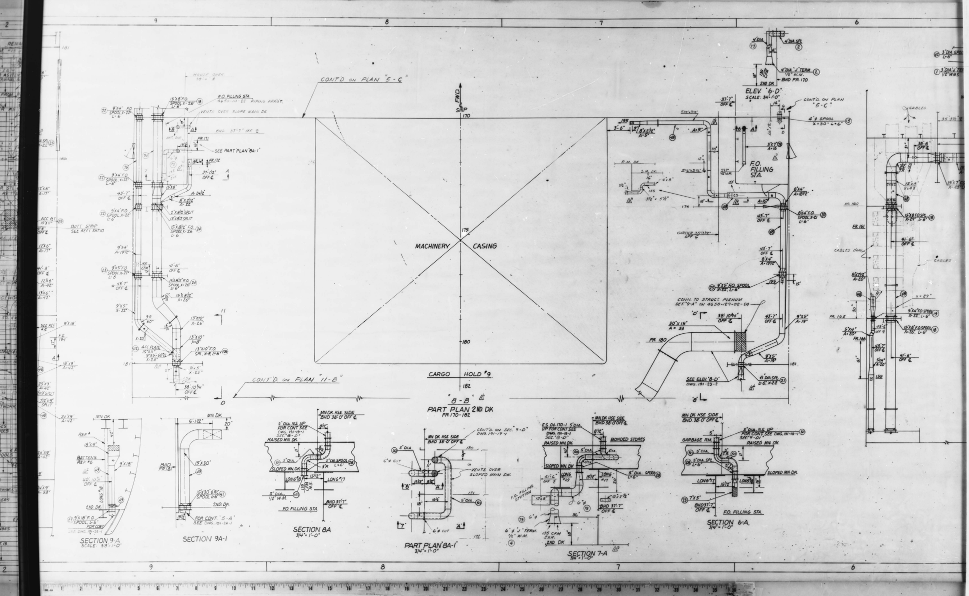
NOV 1980 10X

BUILDERS PLAN NO. M4650-191-23-1

FRAME 2 OF 4


6
5
4
3
ELEV. "6-D"
SCALE 3/4"=1'-0"
F.O. FILLING STA.
SECTION 6-A
3/4"=1'-0"
ELEV. 5-D
STBD. LOOKING INBD.
STORES LOAD'G CORR.
ENG/ELECT. STORES
WEB FR.170
WEB FR166
RAISED MN. DK.
LOWER MN. DK.
STBD. LOOKING FWD.
ELEV. 4-D
STBD. LOOKING INBD.
"3-D"
TYPICAL DETAIL
AIR ESCAPE
HOLD NO. 9
PLENUM BY STRUCTURAL
ENG./ELECT STORES
FREON STORAGE & FAN ROOM
CO2 RM.
BAGGAGE LOCKER
STORES
LOADING CORRIDOR
MACHINERY
CASING
BAL DAMPER
"5-C"
PART PLAN 2ND DK
SCALE: 3/8"=1'-0"
CONT'D ON PLAN "8-B"
FIRE DAMPER IN 6" VENT ON MAIN DK.
SHIP FWD
157
160
165

ITEM	NAME
1	TERMINAL (TYPE J) 3" DIA.
2	4"
3	5"
4	6"
5	1/4" FLAT HD. MACH. SCREW
6	TERMINAL GUARD
7	1" DIA. ROD
8	1 1/2" X 1/2" FLAT BAR
9	DAMPER SLIDE
10	BOLTED ACCESS PLATE 8"X8
11	8"X7
12	6"X6
13	SPOOL
14	
15	
16	15.3 ℔
17	30.6
18	12.75
19	12.75
20	12.75
21	
22	12.75
23	12.75
24	12.75
25	
26	15.3
27	30.6
28	#10 USSG
29	1/2" W.M. SCREEN 4" DIA.
30	SPOOL
31	20.4 ℔
32	10.2
33	10.2
34	20.4
35	15.3
36	30.6
37	10.2
38	8" DIA. STD. PIPE (2 RGD
39	6"
40	15.3 ℔
41	20.4
42	
43	
44	AUTO FIRE DAMPER 10" x 8"
45	
46	SPOOL 20.4 ℔.
47	
48	SHEET STEEL 7.65 # ℔
49	10.2 # ℔
50	#10 USSG
51	SPIRAL CONDUIT PIPE 6" DIA.
52	5"
53	4"
54	3"
55	1/2" WM. SCREEN 20"X35" 6" R.C
56	25"X34" 6" R.C
57	9"X7 1/2" F.O.
58	9"X13" F.O.
59	7"X3 3" R.C.
60	21"X12" F.O.
61	5 1/2" X 3 1/2"
62	FLAT BAR 1" X 1/8"
63	SHEET METAL #10 U.S.S.G.
64	SPIRAL CONDUIT 6" DIA. 90° ELBOW
65	5"
66	4"
67	3" DIA. 45°
68	3/8" HEX. HD. BOLT
69	SPIRAL CONDUIT 6" DIA. 45°
70	6" 22 1/2°
71	TERMINAL (TYPE J) 6" DIA.
72	BALANCE DAMPER (TYPE II)
73	SHEET STEEL 16 U.S.S.G
74	20
75	22
76	24
77	GASKET 1 1/2" x 1/8" CHROMELOCK
78	SHEET STEEL 12.75 # ℔
79	15.3 # ℔
80	20.4 # ℔
81	30.6 # ℔
82	10.2 # ℔
83	3" DIA. STD PIPE
84	4"
85	5"
86	6"
87	BAL DAMPER TYPE II
88	
89	
90	SPIRAL CONDUIT REDUCING LATERAL
91	BAL. DAMPER TYPE II
92	FLAT BAR 1" X 1/8"
93	FLAT BAR 1" X 3/8"
94	NELSON STUDS
95	NELSON STUDS
96	3/8" HEX HD. BOLT
97	3/8 DIA. HEX. NUTS
98	3/8" DIA HEX BOLT
99	1/4" DIA HEX BOLT
100	1/4" DIA. HEX NUTS
101	DUCT SEALG BAND/HEAT SHRINKABLE
102	
103	
104	
105	CONTINUED IN PANEL 10 & 11 SHT.



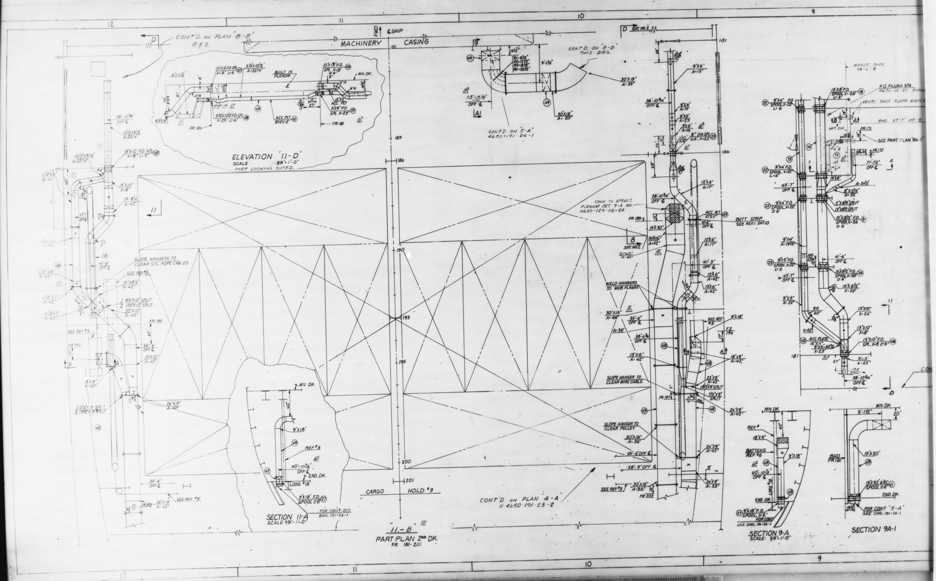
CONT'D ON PLAN "5-C"
FWD.
SHIP
MACHINERY CASING
CARGO HOLD #9
CONT'D. ON PLAN "11-B"
"8-B"
PART PLAN 2ND. DK
FR. 170-182
ELEV. "6-D"
SCALE: 3/4"=1'-0"
F.O. FILLING STA.
SEE PART PLAN 8A-1
SEE ELEV. "8-D" DWG. 191-23-2
CONN. TO STRUCT. PLENUM DET. "9-A" ON 4650-129-02-24
SECTION 9-A
SCALE: 3/8"=1'-0"
SECTION 9A-1
SECTION 8A
3/4"=1'-0"
PART PLAN 8A-1
3/4"=1'-0"
SECTION 7-A
3/4"=1'-0"
SECTION 6-A
3/4"=1'-0"
9
8
7
6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-23-1

FRAME 3 OF 4


MACHINERY CASING
CONT'D. ON PLAN "B-B" P.&S.
CONT'D. ON "B-B" THIS DRG.
CONT'D ON "5-A" 4650-191-24-1
ELEVATION "11-D"
SCALE 3/8"=1'-0"
PORT LOOKING OUTB'D.
BUILT IN PLENUM
MN. DK.
SLOPE HANGERS TO CLEAR STL. ROPE CABLES
CONN. TO STRUCT. PLENUM DET. 9-A ON 4650-129-02-24
BUTT STRIP SEE REF.1 SHT.10
WELD HANGERS TO WEB FLANGE
SLOPE HANGER TO CLEAR WIRE CABLE
SLOPE HANGER TO CLEAR PULLEY
F.O. FILLING STA. 4650-111-22 PIPING
VENTS OVER SLOPE MAIN
SEE PART PLAN "BA-1"
CARGO HOLD #9
CONT'D ON PLAN "4-A" M 4650-191-23-2
SECTION 11-A
SCALE 3/8"=1'-0"
FOR CONT. SEE DWG. 191-24-1
"11-B"
PART PLAN 2ND DK.
FR 181-201
SECTION 9-A
SCALE 3/8"=1'-0"
SECTION 9A-1
FOR CONT. "5-A" SEE DWG. 191-24-1
2ND. DK.
12
11
10
9

VITRO LABORATORIES DIVISION
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BUILDERS PLAN NO. M4650-191-23-1

FRAME 4 OF 4

AUTOMATION INDUSTRIES, INC.
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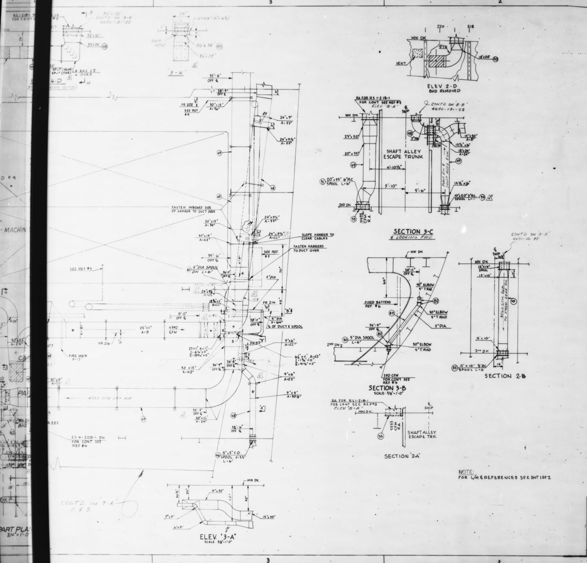
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-191-23-2

NOV 1980 10X

FRAME 1 OF 5


3
2
ELEV 2-D
BHD REMOVED
MN DK
VENT
220
218
SHAFT ALLEY ESCAPE TRUNK
SECTION 3-C
℄ LOOKING FWD
SECTION 3-B
SCALE: 3/8"=1'-0"
SECTION 2-B
SECTION 2A
ELEV. "3-A"
SCALE 3/8"=1'-0"
FASTEN INBOARD SIDE OF HANGER TO DUCT OVER
SLOPE HANGER TO CLEAR CABLES
FASTEN HANGERS TO DUCT OVER
SEE REF #5
FIXED BATTENS REF. #6
90° ELBOW 5" T.RAD
30° ELBOW 5" T.RAD
5" DIA SPOOL L=6"
290 CFM FOR CONT SEE REF #4
RA FOR RS 1-218-1 FOR CONT SEE REF #3 ELEV "8-A"
CONT'D ON 8-B 4650-191-22
SHAFT ALLEY ESCAPE TRK.
4390 CFM
4390 CFM DRY AIR
FIRE MAIN X=12"
ES 4-208-1 DN FOR CONT SEE REF #4
CONT.D ON 7-A P. & S.
PART PLAN 3/4"=1'-0"
MN DK
2ND DK
FR. 202
FR. 214
FR. 216
FR. 217
FR. 222
UAO-50135-M

NOTE:
FOR L/M & REFERENCES SEE SHT 1 OF 2

ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1.	4/21/78	12	1-VENT CUT IN 2ND DK CHGD TO 26"x16" IN ELE. "12-C" TO AGREE PLAN 5-C ON SHT. 1	W.S.	5 2 78
		ALL	2-NOTES ADDED TO DRAWING FOR VENTILATION SYSTEMS CLARIFICATION		
		11	3-IT. #133 & 134 ADDED TO L/M. RESERV. DELETED & REQ.# ADD- TO IT. 116.		
		8	4-SPL IT. 25 CHGD TO 8" ϕ & "X"=22" ON ELE. 8-D AT FR. 186 (21 DEPT.)		
		8	5-SPL IT. 21 CHGD TO 8" ϕ & X=22 ON ELE 8-D AT FR 181 (21 DEPT REQUEST.)		AJG
2	7/31/78	10	1-NOTE ADDED ON "10-A" PERTAINING TO DUCTWORK.	W.S.	8 7 78
		8, 10 & 11	2-IT. 106 & 107 OF L/M MARKED F.O. ON REMARKS COLUMN TO AGREE WITH PLAN 8-B & 11-B.		
		10	3-IT. 108 OF L/M MARKED F.O. ON REMARKS COLUMN TO AGREE WITH ELEV. 11-D ON SHT. 1		AJG
3	1/8/79	3 & 4	1-ELE. "4-D" REVISED & DET. "3-H" ADDED TO CLEAR LONG'L BMS (S) AT FR. 219 ON PLAN "4-A"	W.S.	1 10 79
		12	2-NOTE ADDED TO SPOOL IN MAIN DK AS SHOWN ON DET. "12-A."		AJG
4		10 & 11	1-ITEM # 111 & 117 ADDED TO L/M.		
	4/4/79	5	2-REVISED DUCT AT FR #212 TO 215. PORT SIDE. TO CLEAR HATCH COVER WINCH MOTOR. PLAN "4-A"	RL	
		4	3-LOWERED DRY AIR DUCT AT FR #220 (S). FROM A-8" TO A-24" TO CLEAR SHIPS STRUCT.		
		4	4-RELOCATED SUPP. SYS. DUCT #1-223-1 FROM 12½" TO 13½" AFT OF FR #223 TO SUIT REF #2 + 4. PLAN "4-A"		
		3	5-REVISED DUCTS AT FR #212 TO 219. STBD SIDE TO CLEAR HATCH COVER WINCH MOTOR PLAN "4-A"		
	4/18/79	4 5 6	6-REVISED DUCT AT FR #213-217. PORT SIDE TO CLEAR HATCH COVER RIGGING (PLAN-4-A, SECT. 5-A + SECT. 6-A)		4 23 79
		12	7-ADDED MAT'L IDENTIFICATION TO DUCT VANES (ELEV.-12-B+12-C)	RL	
		2	8-IN SECT. 3-C-INCREASED LENGTH OF SPOOL #34 TO SUIT ALT-3 ON DWG-191-24-1	RL	AJG
5	8/16/79	8	1-REVISED SUPP. DUCT 6"x9" BET'N FR. 181-186 STB'D SIDE TO CLEAR STL ROPE CABLE. ELEV. "8-D"	JD	8 23 79 AJG

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0"
DATE 8-26-77
DRAWN BB
APPROVED
TRACED
APPROVED
CHECKED BEM
APPROVED HBK

PLAN NO. M4650-191-23-2
ALT. NO. 5

HVAC A/D
2ND. DECK
AFT FR. 157

APPROVAL LETTERS					
HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	9-29-77				
A.B.S.					
U.S.C.G.	10-3-77				
LLOYD'S R.S.					
U.S.P.H.S.	9-9-77				

(2) OF (2) DRAWINGS

O. D. MARKS
2-15-79

NO.	PLAN NO.	TITLE
		SEE DWG M-4650-191-23-1

REFERENCE PLANS

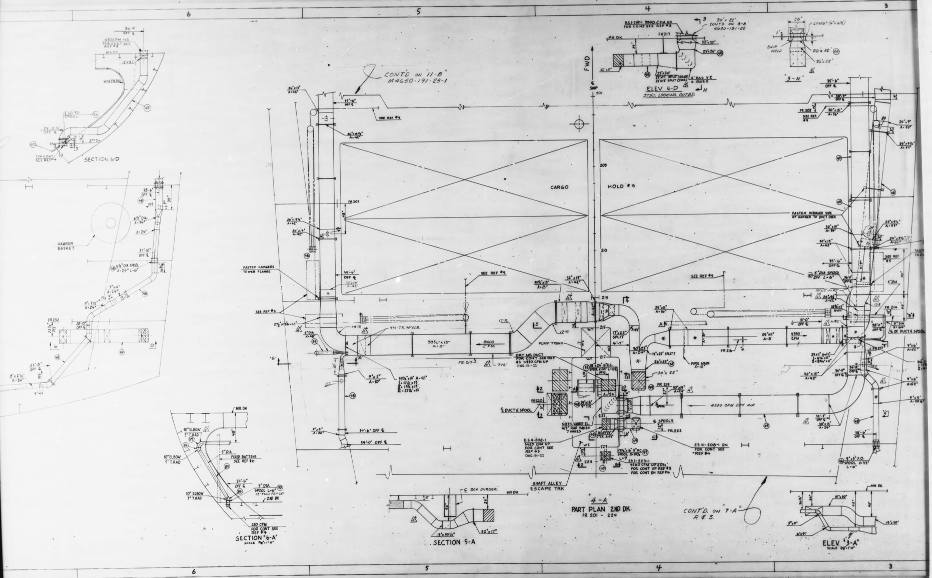
M-679

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-23-2

FRAME 2 OF 5



6
5
4
3
SECTION 6-D
HAWSER BASKET
SECTION "6-A"
SCALE 3/8"=1'-0"
SECTION 5-A
BOX GIRDER
MN DK
CONT'D ON "11-B" M4650-191-23-1
ELEV 4-D
STBD. LOOKING OUTBD.
"3-H"
SHIP WELD
FWD
CARGO
HOLD #9
FASTEN HANGERS TO WEB FLANGE
FASTEN INBOARD SIDE OF HANGER TO DUCT OVER
SEE REF #5
SEE REF #9
PUMP TRUNK
DRY AIR DUCT FOR CONT SEE REF #3 4330 CFM UP
4330 CFM DRY AIR
5600 CFM
4990 CFM
FIRE MAIN
SHAFT ALLEY ESCAPE TRK
"4-A"
PART PLAN 2ND DK
FR 201 - 224
CONT'D. ON "7-A" R & S.
ELEV. "3-A"
SCALE 3/8"=1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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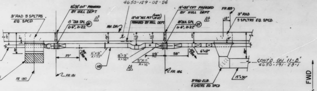
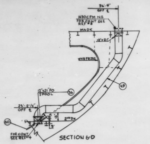
BUILDERS PLAN NO. M4650-191-23-2

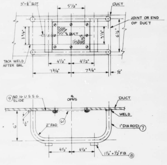
FRAME 3 OF 5


DET. "9-A"
STRUCT. PLENUM
4650-129-02-24
3" RAD 3 SPLTRS EQ. SPCD
14"x30" CUT PROVIDED BY HULL DEPT
8" DIA SPL L=6", X=22 (61)
MN. DK
12"x12" ACC. PLT PROVIDED BY HULL DEPT
8" DIA SPL L=6", X=22" (25)
FR 187
3" RAD 3 SPLTRS EQ. SPCD
12"
5"x9"
39"
6"x9" A=19"
8"x9" A=16"
5"x11" A=16"
29"
38"
6"x12"
(48)
3" RAD 4 SPLTRS EQ SPCD
FR 180
FR 181
FR 186
3" RAD ELB. 4 SPLTRS EQ. SPCD
15"x30"
CONT'D ON "11-B" 4650-191-23-1

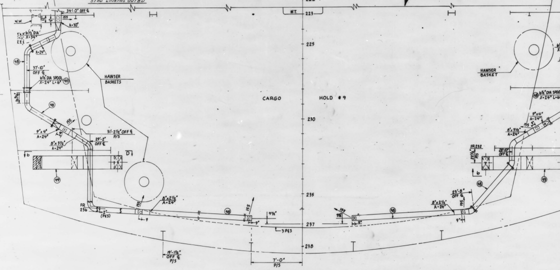
ELEVATION "8-D"
SCALE: 3/8" = 1'-0"
(M4650-191-23-1)
STBD LOOKING OUTB'D


36'-4" OFF ℄
1630 CFM NE FOR CONT SEE REF #3
MN DK
12"x21"
WEB FR 232
12"x21" FO SPOOL (36)
(49)
25'-2½" OFF ℄
2ND DK
(60)
FOR CONT SEE REF #4

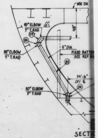
SECTION 6-D


3"x¼" SLOT
5½"
DUCT
JOINT OR END OF DUCT
℄ DUCT
3¾"
3½"
6½"
TACK WELD AFTER BAL
4½"
4½"
7¾"
7¾"
½"
(9) NO. 16 U.S.S.G. SLIDE
℄ OPN'G
DUCT
WELD
6"
(61)
2" RAD
1" DIA ROD (7)
4½"
4½"
1½"x½" F.B. (8)

DETAIL 9-A
TERMINAL GUARD
& BALANCING ARRGT
SCALE 3" = 1'-0"


FWD
℄ SHIP
CONT'D ON "4-A" P & S
34'-0" OFF ℄
W.W.
155
A=30"
6½" DIA X=34"
X=24"
(48)
37'-10" OFF ℄
6½" DIA SPOOL X=24" L=6" (48)
HAWSER BASKETS
9"x4" A=24"
8"x3½" A=24"
31'-2½" OFF ℄ P/S
29'-2" OFF ℄
(49)
FR 236
2" (P&S)
8"x2½" A=24"
9½"
9"
3 P&S
19'-1½" OFF ℄ P/S
7'-0" P/S
W.T.
222
223
225
230
235
237
238
CARGO
HOLD #9
38'-6" OFF ℄
39"
HAWSER BASKET
37'-10" OFF ℄
FR 232
22½" P/S
28'-10" OFF ℄
23'-8" OFF ℄
6
D

"7-A"
PART PLAN 2ND DK
FR 223 AFT


MN. DK
90° ELBOW 5" T. RAD
(119)
(114)
5" DIA
FIXED BATT... SEE REF ...
10" ELBOW 5" T. RAD
34'-6" OFF ℄
10" ELBOW 5" T. RAD
SECTI...

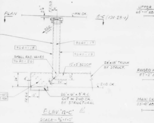
9
8
7
6

CONT'D ON
4650-1
5-C
BY STRUCT
STL BHD
OFF

LIST OF MATERIALS CONTINUED FROM SHT. NO. 1

ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	WT	SOURCE	REQ'N No.
106	SPOOL 12.75" PLT	1	STEEL	ABS GR.A	REF NO.1 SHT.#7 10" × 13"	MADE FROM PC. NO. 78 F.O.			UAO
107	↓ 15.3" ↓	1	↓	↓	↓ 10" × 18"	↓ 79			↓
108	↓	1	↓	↓	↓ 10½" × 5½"	↓ 79			↓
109	½" W.M. SCREEN 5" DIA	1	STL. GALV.			*13 AMER. STL. & WIRE GA.			504832-D
110	BOLTED ACCESS PLATE	1	VARIOUS		REF NO.1, SHT 23 SIZE 12"×8½"	MADE FROM PC. NO. 48, 68, & 77			UAO
111	SPIRAL CONDUIT 5" DIA. 45° ELL	2	STL GALV.	A-526	TYPE E-45-1	UNITED SHEET METAL CO.		#22 USS GA.	
112	BOLTED ACCESS PLATE	2	VARIOUS		REF NO.1, SHT 23 SIZE 15"×11"	MADE FROM PC. NO. 48, 68, & 77			
113	↓	2	↓		↓ 10"×11"	↓			UAO
114	ELBOW, 45° 5" DIA.	2	STEEL SMLS	A234 GR.WPB	SCHD. 40 PIPE		ANSI B16.9	TUBE TURN PT. #5	504802-B
115	ELBOW, 90° 5" DIA.	1	STEEL	↓	SCHD. 40 PIPE		↓	↓ #1	SUPPLY
116	FLEXIBLE CONNECTION 38⅝" DIA	2	VARIOUS		REF. NO.1 SHT. 38			ISOLATORS ON	504824-T
117	SPIRAL CONDUIT 5" DIA. 22½° ELL	2	STL GALV.	A-526	TYP. E-22-2	UNITED SHEET METAL CO.		#22 USS GA.	
118	MANUAL FIRE DAMPER TYPE II	1	VARIOUS		REF. NO.1 SHT. 29	72"×18"		SEE NOTE #96	—
119	BALANCE DAMPER TYPE I	1	VARIOUS		↓ SHT. 28	28"×24"			
120	↓	1	VARIOUS		↓	24"×8½"			
121	↓	1	VARIOUS		↓	16"×4½"			
122	↓	1	VARIOUS		↓	12"×5"			
123	↓	1	VARIOUS		↓	27"×7½"			
124	DAMPER REGULATOR	4	CAD. PL. STL	COMM'L		REF 1 SHT 28-31 BAL. DAMP.		MARSTO MACH. CO. MOD. 13L	504859-P
125	↓	15	↓	↓		↓		13	↓
126	↓	1	BRASS	↓	SHAFT 4' LG.	↓		13M	↓
127	↓	4	↓	↓		↓		24B	↓
128	DEFLECTOR PLATE REGULATOR	3	CAD. PL. STL	↓	ROD 30" LG	SPLIT. DAMP.		↓	↓
129	SPIRAL CONDUIT PIPE 8" DIA.	6'-0"	STL GALV.	A526		UNITED SHEET METAL CO.		#22 USS GA.	504844-S
130	↓ RED. LATERAL	1	↓	↓	L-1R 8"×6"×6"	↓		↓	↓
131	↓ 6" DIA. 90° ELL	1	↓	↓	EV-90-2	↓		↓	↓
132	↓ 8" DIA.	1	↓	↓	E-90-1	↓		↓	↓
133	1½"×⅜" FLAT BAR	240'-0"	STEEL	ABS GR. A		FLANGES			*
134	8" DIA. STD PIPE	2'-0"	↓	ABS TX3 GR. B	SCH. 40-ASTM-A53-SEAMLESS	SPOOLS			504844-AB

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

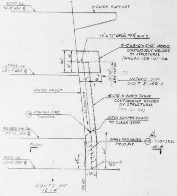

PLAN
MN. DK.
5-C (191-23-1)
FR 163
9640-17
9640-18
9640-19
SMALL RAD. VANES
9640-20
12"x5" SCOOP
24"x18" TRUNK BY STRUCT.
2ND DK.
9640-105
9640-106
26"x16"x3" R.C. CUT IN 2ND DK. BY STRUCTURAL

ELEV. "12-C"

SCALE ~ ⅜" = 1'-0"

LOOKING INBD WITH 25'-0" BHD REMOVED (STBD)

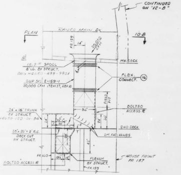
SEE DWG. 191-23-1


BOAT DK. 74'-8" ABV ℄
GUIDE SUPPORT
18"x72" OPNG. W/1½" W.M.S.
3'-0"x9'-0"x3'-0" HOOD CONTINOUSLY WELDED BY STRUCTURAL (H4650-129-01-54
UPPER DK. 65'-11" ABV ℄
14'-10" ABV. MN. DK.
INTAKE SUP SYS. # 2-159-1
HOUSE FRONT
20,000 CFM
18"x72" 3-SIDED TRUNK CONTINOUSLY WELDED BY STRUCTURAL (129-01-54)
118 MANUAL FIRE DAMPER
NOTCH DAMPER BLADE TO CLEAR STIFF.
RAISED MN. DK. 57'-2" ABV ℄
PLAN
SMALL RAD. VANES FIELD FIT
48 7.65# STEEL PLATE
10-B
MAIN DK. 53'-0" ABV ℄
FR 157
CONT'D ON "12-A"

ELEV. "12-B"

SCALE ~ ⅜" = 1'-0"

11-A (191-11-2)


CONTINUED ON "12-B"
RAISED MAIN DK.
PLAN
10-B
FR 159
20,000 CFM
15.3" SPOOL 8' LG. BY STRUCT. DWG H4650-438-9901
MN. DECK
SUP SYS 2-159-1 20,000 CFM ITEM 37, REF 10
FLEX. CONNECT. 116
FIELD FIT
BOLTED ACCESS PL
24"x18" TRUNK BY STRUCT. (H4650-129-01-54
2ND DECK
25"x26"x3" R.C. DECK CUT BY STRUCT.
SM. RAD. VANES
FR 160
PLENUM BY STRUCT.
HOUSE FRONT FR 157
BOLTED ACCESS PL
FR 159

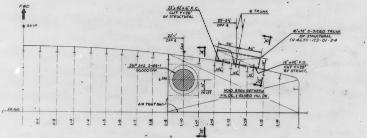
11-A (191-11-2)

ELEV. "12-A"

LOOKING INBD. WITH 25'-0" BHD. REMOVED (STBD)

SCALE ~ ⅜" = 1'-0"

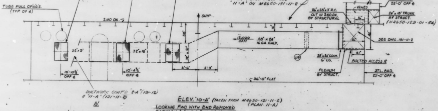
(M4650-191-23-1)


FWD
℄ SHIP
22'x42"x6" R.C. CUT Y=25" BY STRUCTURAL
℄ TRUNK
29'-3½" OFF ℄
22'-1" OFF ℄
18"x72" 3-SIDED TRUNK BY STRUCTURAL (H4650-129-01-54
12"x42" F.O. CUT Y=25" BY STRUCT.
SUP SYS 2-159-1 20,000 CFM
℄ FAN
FR 159
VOID AREA BETWEEN MN. DK. & RAISED MN. DK.
AIR TIGHT BHD
FR 160
L-1 L-2 L-3 L-4 L-5 L-6 L-7 L-8 L-9 L-10 L-11 L-12 L-13 L-14 L-15 L-16

"10-B"

PART PLAN MAIN DECK STBD

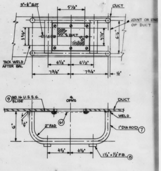
SCALE ~ ⅜" = 1'-0"


REF #6 SHT 1
TUBE PULL OPNG'S (TYP OF 4)
FOR PLAN VIEW SEE "11-A" ON M4650-191-11-2
CONT'D FROM "12-A"
℄ SHIP
2ND DK.
VANES
STL. BHD. 25'-0" OFF ℄
26"x28"x3" R.C. CUT IN 2ND DK. BY STRUCTURAL
24"x18" TRUNK BY STRUCT. (H4650-129-01-54)
32"x9"
32"x16"
13,000 CFM
28"x24" 16 GA. GALV.
SEE DWG. 191-11-2
119
28"x24" COAM. 6" LG.
BOLTED ACCESS PL
PLENUM BY STRUCT.
STL. BHD. 25'-0" OFF ℄
18'-10⅜" OFF ℄
10'-4⅜" OFF ℄
36'-0" FLAT
DUCTWORK CONT'D "2-A" (191-12) & "11-A" (191-11-2)

ELEV. "10-A" (TAKEN FROM M4650-191-11-2) (PLAN 11-A)

LOOKING FWD WITH BHD REMOVED BETWEEN ℄ SHIP & BHD 23'-0" OFF ℄ ON STBD SIDE

SCALE ~ ⅜" = 1'-0"


3"x¼" SLOT
5½"
DUCT
JOINT OR END OF DUCT
℄ DUCT
TACK WELD AFTER BAL.
4½" 4½"
7¾" 7¾"
½"
9 NO. 16 U.S.S.G. SLIDE
℄ OPNG
DUCT
WELD
61
2" RAD
1" DIA ROD 7
1½"x½" F.B. 8

DETAIL 9-A

TERMINAL GUARD & BALANCING ARRGT

SCALE: 3" = 1'-0"

5'-4"

3" RAD & SPLTRS EQ. SPCD

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-23-2

FRAME 4 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

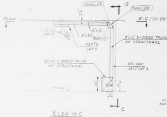
BUILDERS PLAN NO. M4650-191-23-2

FRAME 5 OF 5

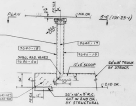
LIST OF MATERIALS CONTINUED FROM SHT. NO. 1

ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	WT
106	SPOOL 12.75" PLT	1	STEEL	ABS GR A	REF NO. 1 SHT 7 10" × 13"	MADE FROM PC. NO. 78 F.O.	
107	↓ 15.3" ↓	1	↓	↓	↓ ↓ 10" × 13"	↓ ↓ 79 ↓	
108	↓ ↓ ↓	1	↓	↓	↓ ↓ 10½" × 5½"	↓ ↓ 79 ↓	
109	½ W.M. SCREEN 5" DIA	1	STL. GALV.			*13 AMER. STL. & WIRE GA.	
110	BOLTED ACCESS PLATE	1	VARIOUS		REF NO. 1, SHT 23 SIZE 12"×8½"	MADE FROM PC. NO. 48, 68, & 77	
111	SPIRAL CONDUIT 5" DIA. 45° ELL	2	STL GALV.	A-526	TYPE E-45-1	UNITED SHEET METAL CO.	
112	BOLTED ACCESS PLATE	2	VARIOUS		REF NO. 1, SHT 23 SIZE 15"×11"	MADE FROM PC. NO. 48, 68, & 77	
113	↓ ↓ ↓	2	↓		↓ ↓ ↓ ↓ 10"×11"	↓ ↓ ↓ ↓ ↓ ↓	
114	ELBOW, 45° 5" DIA.	2	STEEL SMLS	A234 GR WPB	SCHD. 40 PIPE		
115	ELBOW, 90° 5" DIA.	1	STEEL ↓	↓	SCHD. 40 PIPE		
116	FLEXIBLE CONNECTION 38 3/16 DIA	2	VARIOUS		REF. NO. 1 SHT. 33		
117	SPIRAL CONDUIT 5" DIA. 22½° ELL	2	STL GALV.	A-526	TYP. E-22-2	UNITED SHEET METAL CO.	
118	MANUAL FIRE DAMPER TYPE II	1	VARIOUS		REF. NO. 1 SHT. 29	72" × 18"	
119	BALANCE DAMPER TYPE I	1	VARIOUS		SHT. 28	28" × 24"	
120	↓ ↓ ↓	1	VARIOUS		↓ ↓ ↓ ↓	24" × 8½"	
121	↓ ↓ ↓	1	VARIOUS		↓ ↓ ↓ ↓	16" × 4½"	
122	↓ ↓ ↓	1	VARIOUS		↓ ↓ ↓ ↓	12" × 5"	
123	↓ ↓ ↓	1	VARIOUS		↓ ↓ ↓ ↓	27" × 7½"	
124	DAMPER REGULATOR	4	CAD. PL. STL	COMM'L		REF. 1 SHT 23-31 BAL. DAMP.	
125	↓ ↓	15	↓	↓		↓ ↓ ↓	
126	↓ ↓	1	BRASS	↓	SHAFT 4" LG.	↓ ↓ ↓	
127	↓ ↓	4	↓	↓		↓ ↓ ↓	
128	DEFLECTOR PLATE REGULATOR	3	CAD. PL. STL	↓	ROD 30" LG	SPLIT. DAMP.	
129	SPIRAL CONDUIT PIPE 8" DIA.	6'-0"	STL GALV.	A526		UNITED SHEET METAL CO.	
130	↓ ↓ RED. LATERAL	1	↓	↓	L-1R 8" × 6" × 6"	↓	
131	↓ ↓ 6" DIA. 90° ELL	1	↓	↓	EV-90-2	↓	
132	↓ ↓ 8" DIA. ↓	1	↓	↓	E-90-1	↓	
133	1½" × 3/8" FLAT BAR	240'-0"	STEEL	ABS GR. A		FLANGES	
134	8" DIA. STD PIPE	2'-0"	↓	ABS TY. S GR. B	SCH. 40 - ASTM - A53 - SEAMLESS	SPOOLS	

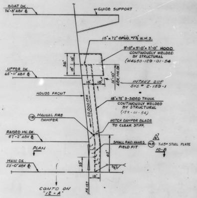
*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED


PLAN
9640-23
9640-22
12
5-C (191-23-1)
17'-10" OFF ℄
5"×12"
4"×20"
9640-21
950 CFM
REF. #6 SHT 1
5"×12" 3-SIDED TRUNK BY STRUCTURAL
26"×18" 2-SIDED TRUNK BY STRUCTURAL
STL. BHD. 25'-0" OFF ℄
2ND DK.
24"
16"
9"
C

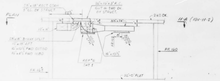
ELEV. "13-C"
SCALE ~ 3/8" = 1'-0"
STBD LOOKING FWD


PLAN
FR 163
MN. DK.
5-C (191-23-1)
950 CFM
9640-17
9640-18
9640-19
SMALL RAD. VANES
9640-20
12"×5" SCOOP
24"×18" TRUNK BY STRUCT.
24"
26"
4"
2ND DK.
VANES 9640-405
BKK PLTS 9640-406
FR 164
15"
26"×16"×3" R.C. CUT IN 2ND DK. BY STRUCTURAL

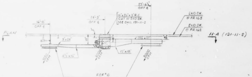
ELEV. "12-C"
SCALE ~ 3/8" = 1'-0"
LOOKING INBD WITH 25'-0" BHD REMOVED (STBD)
SEE DWG. 191-23-1


BOAT DK. 74'-8" ABV ℄
GUIDE SUPPORT
18"×72" OPNG. W/½ W.M.S.
3'-0"×9'-0"×3'-0" HOOD CONTINOUSLY WELDED BY STRUCTURAL (H4650-129-01-54
UPPER DK. 65'-11" ABV ℄
36"
18"
18"
14'-10" ABV. MN. DK.
INTAKE SUP SYS. # 2-159-1
HOUSE FRONT
20,000 CFM
18"×72" 3-SIDED TRUNK CONTINOUSLY WELDED BY STRUCTURAL (129-01-54)
118 MANUAL FIRE DAMPER
NOTCH DAMPER BLADE TO CLEAR STIFF.
RAISED MN. DK. 57'-2" ABV ℄
SMALL RAD. VANES FIELD FIT
48 7.65# STEEL PLATE
10-B
PLAN
MAIN DK. 53'-0" ABV ℄
62"
25"
18"
FR 157
CONT'D ON "12-A"

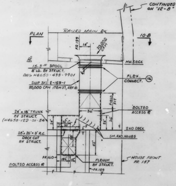
ELEV. "12-B"
SCALE ~ 3/8" = 1'-0"


PLAN
25"×18" RECT. COAM. 5" LG. BY STRUCT.
26"×16"×3" R.C. CUT IN 2ND DK. BY STRUCT.
2ND DK.
11-A (191-11-2)
12"×16"
28"×18" 3-WAY SPLIT
12"×18" AFT
16"×13½" FWD OUTBD
16"×4½" FWD INBD
1050 CFM
FR 162
3000 CFM
16"×13½"
FR 160
REF. #6 SHT 1
FR 165
36'-0" FLAT

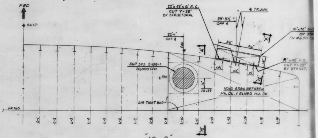
ELEV. "13-B"
SCALE ~ 3/8" = 1'-0"
SEE DWG. 191-11-2
STBD LOOKING INBD


27'-6½" OFF ℄
16'-8" OFF ℄
24'-3" OFF ℄
16"×26"×3" R.C. CUT IN 2ND DK. SEE DWG. 191-11-2
2ND DK. @ FR 165
2ND DK. @ FR 162
PLAN
11-A (191-11-2)
3"×24"
4½"×16"
12"×18"
1050 CFM
3000 CFM
3000 CFM
REF. #6 SHT 1
36'-0" FLAT

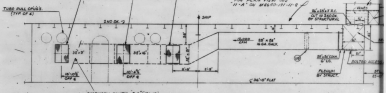
ELEV. "13-A"
SCALE ~ 3/8" = 1'-0"
SEE DWG. 191-11-2
STBD LOOKING FWD


CONTINUED ON "12-B"
RAISED MAIN DK.
PLAN
10-B
FR 159
16"
20,000 CFM
MN. DECK
15.3" SPOOL 8" LG. BY STRUCT. DWG H4650-438-9901
FLEX. CONNECT. 116
SUP SYS 2-159-1 20,000 CFM ITEM 37, REF 10
FIELD FIT
BOLTED ACCESS PL
36"
24"×18" TRUNK BY STRUCT. (H4650-129-01-54
2ND DECK
28"×26"×3" R.C. DECK CUT BY STRUCT.
SM. RAD. VANES
42"
FR 160
BOLTED ACCESS PL
PLENUM BY STRUCT.
FR 159
HOUSE FRONT FR 157

ELEV. "12-A"
LOOKING INBD. WITH 25'-0" BHD. REMOVED (STBD)
SCALE ~ 3/8" = 1'-0"
(M4650-191-23-1)


FWD
℄ SHIP
22"×42"×6" R.C. CUT Y=25" BY STRUCTURAL
℄ TRUNK
29'-3½" OFF ℄
22'-1" OFF ℄
18"×72" 3-
BY STR
(H4650-
36"
36"
"B"
"A"
SUP SYS 2-159-1 20,000 CFM
℄ FAN
14"
FR 159
12"×42" F.O. CUT Y=25" BY STRUCT.
VOID AREA BETWEEN MN. DK. & RAISED MN. DK.
AIR TIGHT BHD
FR 160
L-1
L-2
L-3
L-4
L-5
L-6
L-7
L-8
L-9
L-10
L-11
L-12
L-13
L-14
L-15
L-16
"12"

"10-B"
PART PLAN MAIN DECK STBD
SCALE ~ 3/8" = 1'-0"


CONT'D FROM "12-A"
REF. #6 SHT 1
TUBE PULL OPNG'S. (TYP. OF 4)
FOR PLAN VIEW SEE "11-A" ON M4650-191-11-2
℄ SHIP
2ND DK.
26"×28"×3" R.C. CUT IN 2ND DK. BY STRUCTURAL
VANES
32"×9"
32"×16"
32"×21"
36"
12,000 CFM
28"×24" 16 GA. GALV.
119
28"×24" COAM. 6" LG.
PLENUM BY STRUCT.
BOLTED ACCESS
18'-10½" OFF ℄
10'-4¾" OFF ℄
3'-6"
2'-9"
36'-0" FLAT
DUCTWORK CONT'D "2-A" (191-12) & "11-A" (191-11-2)

ELEV. "10-A" (TAKEN FROM M4650-191-11-2) (PLAN 11-A)
LOOKING FWD WITH BHD REMOVED BETWEEN ℄ SHIP & BHD 23'-0" OFF ℄ ON STBD SIDE
SCALE ~ 3/8" = 1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-24-1

FRAME 1 OF 4

LI… OF STRUCTURAL PENETRATIONS

COAM ITEM NO.	FR…	…CATION DISTANCE OFF ℄	HEIGHT	COAMING SIZE	RC	MATERIAL	LG'TH	STRUCTURE PENETRATED	DECK
19-V-1	ON	38'-7" (S)	X=27"	9" DIA	–	20.4# ℞	6"	TRANSV. FRAME	3RD DK.
19-V-2	13½	28'-5½" (S)	–	9"x5"	FO	17.8# ℞	4"	DECK	3RD DK.
19-V-3									
19-V-4	ON	34'-1" (S)	Y=60"	15"x30"	6"	15.3# ℞	6"	BHD.	3RD DK.
19-V-5	13½	28'-5½" (P)	–	9"x5"	FO	17.8# ℞	4"	DECK	3RD DK.
19-V-6	ON	38'-7" (P)	X=27"	9" DIA	–	20.4# ℞	6"	TRANSV. FRAME	3RD DK.
19-V-7									
19-V-8									
19-V-9									
19-V-11									
19-V-12	18"	3'-3" (S)	Y=28"	10"x20"	3"	10.2# ℞	6"	BHD.	3RD DK.
19-V-13	ON	20'-11½" (S)	X=14½"	8"x4"	FO	20.4# ℞	6"	TRANSV. FRAME	20'-0" FLAT
19-V-14	ON	20'-11½" (S)	X=15"	5" DIA	–	17.#56	6"		
19-V-15	ON	20'-11½" (P)	X=14½"	8"x4"	FO	20.4# ℞	6"		
19-V-16	ON	20'-11½" (P)	X=15"	5" DIA	–	17.#56	6"		
19-V-17	ON	3'-10" (S)	X=33"	18"x12½"	3"	20.4# ℞	6"	BHD.	
19-V-18	7'F	3'-8" (S)	–	8"x12"	FO	20.4# ℞	6"	DECK	

LIST OF MATERIALS FOR ONE SHIP

△³ RES#1

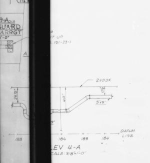
ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	WT	SOURCE	REQ'N. NO.
1	FAN AXIAL EXH 4-208-1	1	VARIOUS		REF. 3 ITEM Nº 9	SIZE: 40 A.F.			500027
2									
3	UNIT HEATER	1	VARIOUS		REF. 7 ITEM NO. 8				500028-A
4									
5	TERMINAL (TYPE "J") 8"x10"	2	VARIOUS	COMM'L.		JUNIPER IND. FIG. JE-108			504558-H
6	(TYPE "J") 9" DIA	1							
7	(TYPE "J") 12"x8"	1							
8	(TYPE "J") 8½" DIA	1	VARIOUS						
9									
10	TERMINAL GUARD	32	STEEL		DET. "9-A" SH. 2 OF 2 REF. 2	ORDER AS ITEMS 11 & 12			
11	1" DIA ROD	112 LF		ABS-GR.A		FOR TERMINAL GUARD DET 9A REF 2			*
12	1½" x ½" FLAT BAR	26 LF							*
13	DAMPER SLIDE (6"x4")	32	STL GALV	A525	DET. "9-A" SH. 2 OF 2 REF. 2	ORDER AS ITEM # 41			UAO
14									
15	SPOOL ~ 6" L'G ~ 10"x20"~3" R.C.	1	STEEL	ABS-GR.A	REF. 1 SH. 7 #19-V-12	ORDER AS ITEM # 51			UAO
16	18"x12½"~3" R.C.	1			#19-V-17	# 54			
17	12"x8" F.O.	1			#19-V-18	# 54			
18	9" DIA.	2			#19-V-1 & 6	# 54			
19									
20	15"x30"~6" R.C.	1			#19-V-4	# 52			
21									
22	SPOOL ~ 4" L'G ~ 9"x5" F.O.	2	STEEL	ABS-GR.A	REF. 1 SH. 7 #19-V-2 & 5	ORDER AS ITEM # 53			UAO
23	6" 5" DIA.	2			#19-V-14 & 16	# 56			
24	8"x4" F.O.	2			#19-V-13 & 15	# 54			
25									
26	W.M. GRILLE	1	VARIOUS		15	SIZE: 35"x20"			
27		2				21"x12"			
28	BALANCE DAMPER TYPE II	2			29 (DET. "E")	8"x10"			
29		1				SPLITTER TYPE 7½"x13"			
30		2				9" DIA.			
31		1				8"x12"			
32		1	VARIOUS		REF. 1 SH. 29	8½" DIA			
33	ANGLE 1"x1"x⅛"	1½ LF	STL GALV.	ABS-GR.A	MADE FROM PC. #40	FOR UNIT HTR. FDN.			
34	LOCK WASHER	2		COMM'L.	½" DIA ~ 13 NC ~ 2				SUPPLY
35									
36									
37	SHEET STEEL 15.3# ℞	75 ¢	STEEL	ABS-GR.A					
38	SHEET STEEL 7.65# ℞	1345 ¢	STEEL		REF. 1, SH. 10 & 11	FOR DUCT WORK HANGERS & FLANGES			*
39	10.2# ℞	191 ¢							*
40	METAL 10 GA	271 ¢	STL. GALV.	A525	& 23	ACCESS COVERS			*
41	16 GA	458 ¢							*
42									
43	20	37 ¢							*
44	22	30 ¢							*
45									
46	~~W.M. SCREEN TYPE U~~	~~1~~	~~STL GALV~~			~~SIZE 15"x12"~~			
47	W. M. GRILLE	32			REF. 1, SH. 15	SIZE: 5½"x3½"			
48	GASKET 1½" x ⅛" CHROMELOCK	500 L/F	FELT		IMPREGNATED	FOR FLANGES			504824-U
49	MACHINE SCREWS, R'D. HD.	37	ST'L. GALV.	MIL-FF-S-92A AM. 1, TY. 1, STY 15	REF. 1, SH. 23	¼" DIA ~ 20 NC-2 ~ ⅜" L'G.			504830-AA
50									
51	SHEET STEEL 10.2# ℞	2.5 ¢	STEEL	ABS-GR.A		FOR SPOOLS			*
52	15.3# ℞	6 ¢							*
53	17.8# ℞	2.5 ¢							CUTTINGS
54	20.4# ℞	20 ¢							*
55	ANGLE 1½"x1½"x3/16"	38 L.FT.				SEE DET. 8-B & 9-A			*
56	5⅝" O.D. x ½" WALL THK.	12" LG		ASTM A 519 GR. 1020, H.F.	MECH. TUBING	CUT FOR (2) SPOOLS			500104-C/
57									
58									
59									
60	NUTS, HEX HD. A.S.H. ANSI B18.2.2	62	ST'L. GALV.	ASTM-A-307 GR. B	REF. 1 SH. 10	½" DIA. ~ 13 NC-2			504830-AA
61									
62									
63	BOLTS, HEX. HD. REG. ANSI B18.2.1	1116	ST'L. GALV.	ASTM A-307 GR. B	REF. 1 SH. 10 & 11	⅜" DIA. ~ 16 NC-2 ~ 1¼" L'G.			504830-AA
64	NUTS, A.S.H. B18.2.2	1296				⅜" DIA. ~ 16 NC-2			
65									
66									
67									
68	BOLTS, HEX. HD. REG. ANSI B18.2.1	102	ST'L. GALV.	ASTM A-307 GR. B	REF. 1 SH. 10	⅜" DIA. 16 NC-2 ~ 1" LG.			504830-AA
69	FLAT BAR CLIP	144	VARIOUS	COMM'L.	NELSON STUD PART NO. A101-501-786	FOR HANGERS REF. 1, SH. 14			504839-K
70		26			101-084-029				
71	BOLT, HEX. HD. REG. ANSI B18.2.1	78	STL. GALV.	A307-GR.B	REF. 1 SH. 10	⅜" DIA ~ 16 NC-2 ~ ¾" L'G.			504830-AA
72	A.S.H. B18.2.2	62				½" DIA ~ 13 NC-2 ~ 1¼" L'G.			
73	WASHER, ½" NOM. I.D. ANSI B27.2	60		COMM'L.		FOR PC NO. 72 IN L/M			SUPPLY

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

GENERAL NOTES

…ADDITIONAL GENERAL NOTES & TYPICAL DETAILS SEE REF #1
…HORIZONTAL DUCT WORK IN CARGO HOLD #9 TO BE FABRICATED …7.65# ℞
…VERTICAL DUCT WORK IN CARGO HOLD #9 TO BE FABRICATED OF 10.2# ℞
…ALL SUPPLY TERMINALS, GUARDS & BALANCING ARRG'T OF SS 1-218-1 …VING CARGO HOLD #9 SEE DET 9A SHT 2 OF 2 REF #2
…ELBOWS TO BE FULL THROAT RADII UNLESS OTHERWISE NOTED
…GERS TO BE SPACED NOT MORE THAN 8' FT APART. HANGERS ARE …WN THUS
…ANTITY OF MATERIAL SHOWN IN L/M IS NET. NO ALLOWANCE …ADE FOR SCRAP

7¾"
(10) (13) (47)
1½"



ELEV 4-A
SCALE: 3/8" = 1'-0"

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	2/15/78	5	1-DIST. WTR TANK SHWN ON PLAN "5-A". VENTS REVISED TO CLEAR PER GGS LTR AUG. 31/77 5587/538. "5-D" REV.	W.S.	
		3 11 5&8	2-IT. 28 INCR. FROM 1 TO 2 3-IT. 29 INDICATED ON PLAN 11-A. 4-ELE. "8-A" INDICATED ON PLAN "5-A" PER GGS LTR AUG. 29, 1977 5587/538.		
		4	5-RESERV. DELETED FROM SPOOL 19-V-4		3-21-78 JGa
2	8/16/78	5	1-IT #37 CHG'D TO #38 ON DET. "5-A" TO CORRECT.	W.S.	
	3/16/79	11	2-9"x3" VENTS MOVED INBD TO CLEAR STRUCT. ON PLAN "11-A" FR. 215-223 (P & S)		
		3&4	3-SPOOLS 19-V-14 & 16 CHG'D TO 5" TUBING - IT. 56 ADDED TO L/M.		3-16-79 JGa
3	5/2/79	11&12	1-ALT 20"x10" SHAFT ALLEY EXH. DUCT. FR 218-222 TO CLEAR SHIPS STRUCT. -CHANGED PLAN-11-A, ELEV-12-A, SECT-12-B AND ADDED SECT-12-A1	RL	
	6/4/79	4&6	2 5"x9" SUPP. DUCT CHANGED TO CLEAR SHELL STRINGER FR 193-195 P&S PLAN 5-A & ELEV 7-A		
	6/21/79	4&6	3 SUPP. DUCT CHANGED TO CLEAR WINCH MOTORS BET'N FR 185-187 P&S ON PLAN 5-A	J.D.	8-23-79 JGa

HULL	DESIGN	CHARGE
4651	27,340 DWT CONTAINERSHIP	8450
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED
DATE 7-27-77
DRAWN HMF
APPROVED
TRACED
APPROVED
CHECKED REM
APPROVED HBW

PLAN NO. M-4650-191-24-1
ALT. NO. 3

HVAC A/D 3RD DECK & BELOW AFT FR. 182

UAO-50135-K

REFERENCE PLANS

NO.	PLAN NO.	TITLE
15		
14		
13	H-4650-129-12-23	FDT. 40 AF FAN CARGO PUMP RM. & SHAFT ALLEY
12	M-4650-129-02-10	3RD DK. PLTG. & GRDS. FR. 181 TO 223
11	-129-02-18,19	2ND DK. PLTG. & GRDS. AFT 153½
10	-191-4	VENT. HEATING & COOLING LOAD CALC'S.
9	-202-10-06	WIREWAY DET. 3RD DK. & BEL. & STEERING GR. FLAT
8	-111-21-02	HVAC DIAG. MN. DK. AFT 215 & 2ND DK AFT
7	-191-6	HEATING & COOLING COIL LIST
6	-129-06-01	CONTAINER STOOLS HOLD #9
5	-191-11-1,2	HVAC A/D MACH'Y SPACE PLAN & L/M
4		
3	-191-5	HVAC FAN LIST
2	-191-23-1,2	HVAC A/D 2ND DK. AFT FR. 157
1	EF-531	STD. PLAN A/C & VENT CONST. DET. & L/M

APPROVAL LETTERS

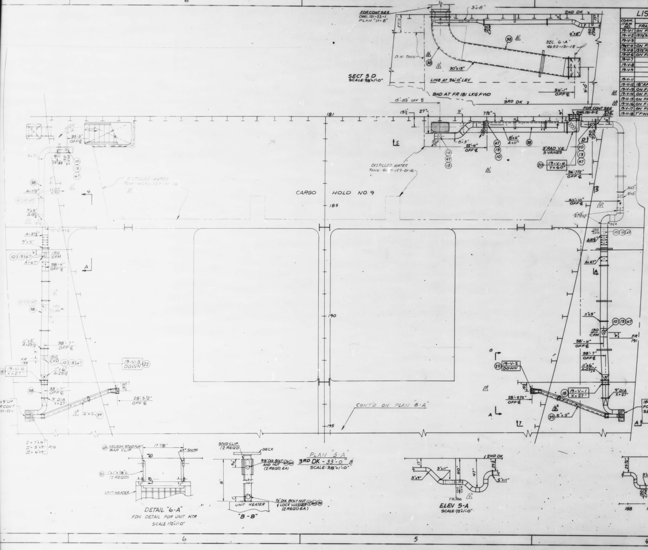
HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-29-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

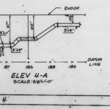
UNIT 9640

O.D. MARKS
4-27-78

		DATE OF ISSUE
	ALTERATION	[illegible]
	ENGINEERING DISTRIBUTION	[illegible]
MAIL	OWNERS	[illegible]
	AMERICAN BUREAU	[illegible]
	LLOYD'S R.S.	[illegible]
	U.S.M.A.	[illegible]
	U.S. NAVY	[illegible]
	U.S.C.G.	[illegible]
	JOINER CONT'R.	[illegible]
INSPECTION	OWNER'S INSP.	[illegible]
	AM. BU. INSP.	[illegible]
	LLOYD'S INSP.	[illegible]
	U.S.M.A. INSP.	[illegible]
	U.S. NAVY INSP.	[illegible]
	U.S.C.G. INSP.	[illegible]
OFFICE	HULL DRAFT.-21	[illegible]
	MACH. DRAFT.-22	[illegible]
	ELEC. DRAFT.-23	[illegible]
	OUTFIT. DRAFT.-25	[illegible]
	ESTIMATING	[illegible]
MISC.	PRODUCTION (SCD)	[illegible]
	ORDER DEPT.	[illegible]
	JOINER CONT'R. YARD	[illegible]
	TOTAL ENG'R. DIST.	[illegible]
	YARD DISTRIBUTION	[illegible]
YARD	PIECE RATE-11	[illegible]
	TEST DEPARTMENT	[illegible]
	PERM. PLANNING	[illegible]
STRUCTURAL	GROUND ASSEMBLY	[illegible]
	NO. WAY	[illegible]
	NO. WAY	[illegible]
	NO. WAY	[illegible]
	NO. WAY	[illegible]
	STRUCT. SUPER.	[illegible]
	OPTICAL DETAIL-48	[illegible]
	WET DOCK	[illegible]
MACH'Y & OUTFIT.	PIPE SHOP-53	[illegible]
	OUTFIT. #1 PIER	[illegible]
	PIPE DRAFT-52	[illegible]
	BOILER SHOP-58	[illegible]
	OUTSIDE MACH.-60	[illegible]
	ELECTRIC SHOP-70	[illegible]
	SHEET MET. SHOP-74	[illegible]
	COPPER SHOP-51	[illegible]
	PAINT SHOP-78	[illegible]
OTHER	WELDING	[illegible]
	MOLD LOFT-41	[illegible]
	BRACKET SHOP	[illegible]
	TOTAL YARD DIST.	[illegible]

M-680


6
5
4
FOR CONT SEE DWG. 191-23-1 PLAN "11-B"
3'x8"
2ND DK
D.W. TANK
30"x15"
SEC "6-A" 4650-191-18
SECT 5 D
SCALE: 3/8"=1'-0"
LINE AT 36'-0" LEV
BHD AT FR 181 LKG FWD
34'-1" OFF ℄
15'-0½" OFF ℄
3RD DK
181
185
190
195
35'-5" OFF ℄
DISTILLED WATER TANK 4650-129-01-16
CARGO HOLD NO. 9
8"x4" A=11"
3"RAD V.E. 5 VANES
22'-4" OFF ℄
19-V-4 Y=60"
36'-7½" OFF ℄
40'-10" OFF ℄
FOR CONT SEE DWG. 191-11-2
150 CFM
38'-4" OFF ℄
38'-7" OFF ℄
19-V-5 DOWN
19-V-6 X=27"
28'-5½" OFF ℄
5"x3" 39
19-V-2 DOWN
19-V-1 X=27"
9"DIA X=27"
18"x9" UP FOR CONT. UP SEE DWG. 191-23-1
CONT'D ON PLAN "8-A"
FR 191
FR 193
PLAN "5 A"
3RD DK - 33'-0"
SCALE: 3/8"=1'-0"
NELSON STUD FLAT BAR CLIP
45° SNIPE
1½"x⅛"L (2 REQ'D)
UNIT HEATER
DETAIL "6-A"
FDN DETAIL FOR UNIT HTR
SCALE 1½"=1'-0"
STUD CLIP (2 REQ'D)
DECK
3/8" DIA BOLT AND NUT (2 REQ'D EA)
½" DIA BOLT NUT & LOCK WASHER (2 REQ'D EA)
"B-B"
ELEV 5-A
SCALE: ½"=1'-0"
FR 186
5"x11"
5"x9"
I = 7"x9"
II = 5"x9"
III = 6"x9"


2ND DK
188
187
186
185
184
DATUM LINE
ELEV 4-A
SCALE: 3/8"=1'-0"

LIST OF STRUCTURAL PENETRATIONS

COAM. ITEM NO.	LOCATION			COAMING				STRUCTURE PENETRATED	DECK
	FRAME	DISTANCE OFF ℄	HEIGHT	SIZE	R.C.	MATERIAL	LG'TH		
19-V-1	ON FR 193	38'-7" (S)	X=27"	9" DIA.	–	20.4#.	6"	TRANSV. FRAME	3RD DK.
19-V-2	13½" AFT. 193	28'-5½" (S)	–	9"x5"	F.O.	17.8#.	4"	DECK	3RD DK.
19-V-3									
19-V-4	ON FR. 181	34'-1" (S)	Y=60"	15"x30"	6"	15.3#.	6"	BHD.	3RD DK.
19-V-5	13½" AFT. 193	28'-5½" (P)	–	9"x5"	F.O.	17.8#.	4"	DECK	3RD DK.
19-V-6	ON FR 193	38'-7" (P)	X=27"	9" DIA.	–	20.4#.	6"	TRANSV. FRAME	3RD DK.
19-V-7									
19-V-8									
19-V-9									
19-V-11									
19-V-12	18" AFT. 217	3'-3" (S)	Y=28"	10"x20"	3"	10.2#.	6"	BHD.	3RD DK.
19-V-13	ON FR. 193	20'-11½" (S)	X=14½"	8"x4"	F.O.	20.4#.	6"	TRANSV. FRAME	20'-0" FLAT.
19-V-14	ON FR. 186	20'-11½" (S)	X=15"	5" DIA.	–	17.#56	6"		
19-V-15	ON FR. 193	20'-11½" (P)	X=14½"	8"x4"	F.O.	20.4#.	6"		
19-V-16	ON FR. 186	20'-11½" (P)	X=15"	5" DIA	–	17.#56	6"		
19-V-17	ON FR. 207	3'-10" (S)	X=33"	18"x12½"	3"	20.4#.	6"	BHD.	
19-V-18	7" FWD. 207	3'-8" (S)	–	8"x12"	F.O.	20.4#.	6"	DECK	

RES#1

GENERAL NOTES

1. FOR ADDITIONAL GENERAL NOTES & TYPICAL DETAILS SEE REF #1
2. ALL HORIZONTAL DUCT WORK IN CARGO HOLD #9 TO BE FABRICATED OF 7.65#.
3. ALL VERTICAL DUCT WORK IN CARGO HOLD #9 TO BE FABRICATED OF 10.2#.
4. FOR ALL SUPPLY TERMINALS, GUARDS & BALANCING ARRG'T OF SS.1-218-1 SERVING CARGO HOLD #9 SEE DET 9A SHT 2 OF 2 REF #2
5. ALL ELBOWS TO BE FULL THROAT RADII UNLESS OTHERWISE NOTED.
6. HANGERS TO BE SPACED NOT MORE THAN 8' FT. APART. HANGERS ARE SHOWN THUS
7. QUANTITY OF MATERIAL SHOWN IN L/M IS NET NO ALLOWANCE IS MADE FOR SCRAP.

ITEM	NAME
1	FAN AXIAL EXH 4-208-1
2	
3	UNIT HEATER
4	
5	TERMINAL (TYPE "J") 8"x10"
6	(TYPE "J") 9" DIA
7	(TYPE "J") 12"x8"
8	(TYPE "J") 8½" DIA
9	
10	TERMINAL GUARD
11	1" DIA ROD
12	1½"x½" FLAT BAR
13	DAMPER SLIDE (6"x4")
14	
15	SPOOL ~ 6" L'G ~ 10"x20"~3" R.C.
16	18"x12½"~3" R.C.
17	12"x8" F.O.
18	9" DIA.
19	
20	15"x30"~6" R.C.
21	
22	SPOOL ~ 4" L'G ~ 9"x5" F.O.
23	6" 5" DIA
24	8"x4" F.O.
25	
26	W.M. GRILLE
27	
28	BALANCE DAMPER TYPE II
29	
30	
31	
32	
33	ANGLE 1"x1"x⅛"
34	LOCK WASHER
35	
36	
37	SHEET STEEL 15.3#.
38	SHEET STEEL 7.65#.
39	10.2#.
40	METAL 10 GA.
41	16 GA.
42	
43	20
44	22
45	
46	W.M. SCREEN TYPE U
47	W. M. GRILLE
48	GASKET 1½"x⅛" CHROMELOCK
49	MACHINE SCREWS, R'D. HD.
50	
51	SHEET STEEL 10.2#.
52	15.3#.
53	17.8#.
54	20.4#.
55	ANGLE 1½"x1½"x3/16"
56	5⅝" O.D. x ½" WALL TH'K
57	
58	
59	
60	NUTS, HEX HD. A.S.H. ANSI B18.2.2
61	
62	
63	BOLTS, HEX. HD. REG. ANSI B18.2.1
64	NUTS, A.S.H. B18.2.2
65	
66	
67	
68	BOLTS, HEX. HD. REG. ANSI B18.2.1
69	FLAT BAR CLIP
70	
71	BOLT. HEX. HD. - REG. ANSI B18.2.1
72	A.S.H. B18.2.2
73	WASHER, ½" NOM. I.D. ANSI B27.2

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN

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VITRO LABORATORIES DIVISION
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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-24-1

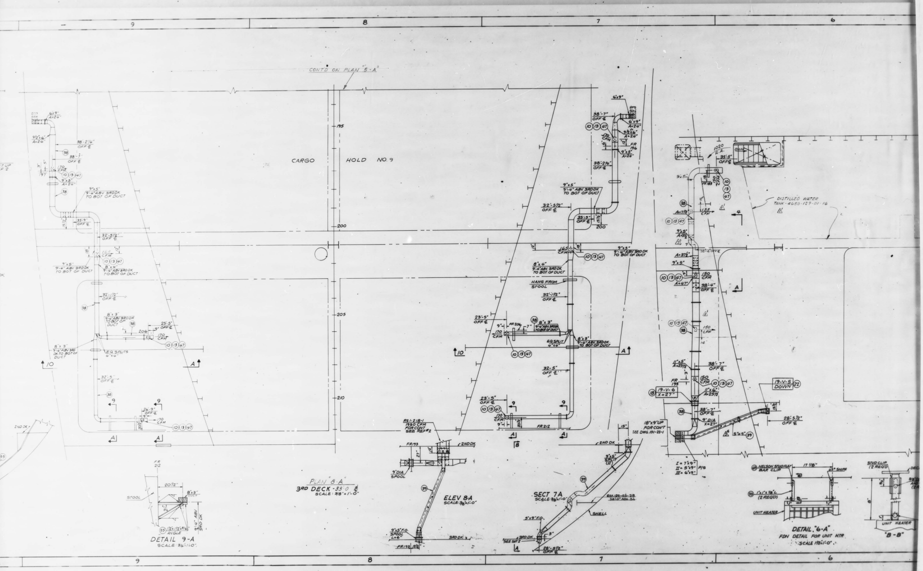
FRAME 2 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-24-1

FRAME 3 OF 4


9
8
7
6
CONT'D ON PLAN "5-A"
CARGO HOLD NO. 9
195
200
205
210
DISTILLED WATER TANK 4650-129-01-16
HANG FROM SPOOL
EQ SPLITS
19-V-5 DOWN
19-V-6 X=27"
18"x9" UP FOR CONT SEE DWG. 191-23-1
RS1-218-1 1930 CFM FOR CONT SEE REF #2
PLAN "8-A"
3RD DECK -33'0" ℄
SCALE: 3/8"=1'-0"
DETAIL 9-A
SCALE: 3/4"=1'-0"
STOOL
ELEV 8-A
SCALE: 3/8"=1'-0"
SECT 7A
SHELL
NELSON STUD FLAT BAR CLIP
UNIT HEATER
DETAIL "6-A"
FDN DETAIL FOR UNIT HTR
SCALE 1½"=1'-0"
"B-B"

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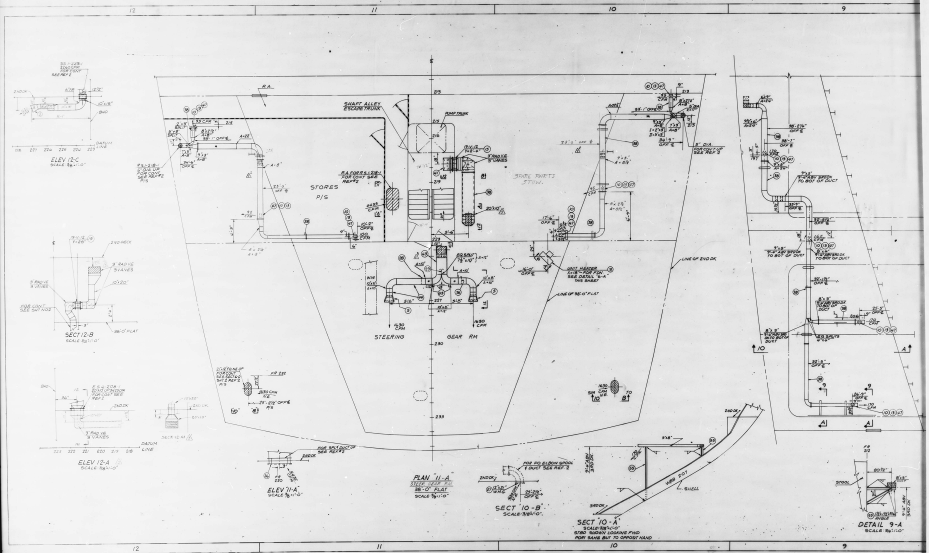
BUILDERS PLAN NO. M4650-191-24-1

FRAME 4 OF 4


12
11
10
9
ELEV 12-C
SCALE 3/8"=1'-0"
SECT 12-B
SCALE 3/8"=1'-0"
ELEV 12-A
SCALE 3/8"=1'-0"
SHAFT ALLEY ESCAPE TRUNK
PUMP TRUNK
STORES P/S
SPARE PARTS STOW.
STEERING GEAR RM
UNIT HEATER
LINE OF 2ND DK
LINE OF 38'-0" FLAT
PLAN "11-A"
STEER GEAR RM
38'-0" FLAT
SCALE 3/8"=1'-0"
ELEV "11-A"
SCALE 3/8"=1'-0"
SECT "10-B"
SCALE 3/8"=1'-0"
SECT "10-A"
SCALE 3/8"=1'-0"
STBD SHOWN LOOKING FWD
PORT SAME BUT TO OPPOSIT HAND
WEB 207
SHELL
DETAIL 9-A
SCALE 3/4"=1'-0"
1630 CFM
4435 CFM
EQ SPLIT
EQ SPLITS

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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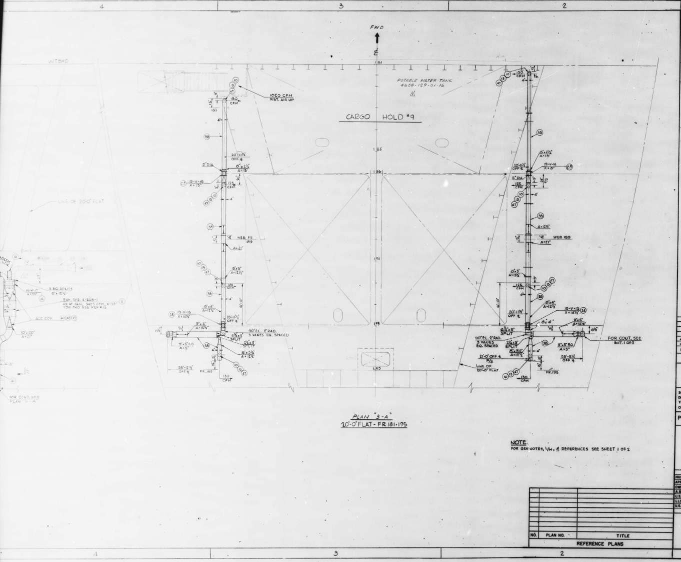
BUILDERS PLAN NO. M4650-191-24-2

NOV 1980 10X

FRAME 1 OF 4


FWD
CARGO HOLD #9
POTABLE WATER TANK
4650-129-01-16
1080 CFM
RET. AIR UP
WEB FR 189
WEB 189
90° EL. 2' RAD.
3 VANES EQ. SPACED
SPLIT
LINE OF 20'-0" FLAT
FOR CONT. SEE SHT. 1 OF 2
FOR CONT. SEE PLAN 2-A
FR. 195
FR. 185
130 CFM
PUMP FLAT
WTBHD

PLAN "3-A"
20'-0" FLAT - FR 181-195

NOTE:
FOR GEN NOTES, L/M, & REFERENCES SEE SHEET 1 OF 2

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	8/15/78	3	1-POTABLE WTR TANK INDICATED SHOWING VENT CLEARANCE ON PLAN "3-A" PER GGS LTR AUG. 31, 1977 5587/538.	W.S.	
		10	2-LADDER INDICATED ON PLAN 10-A PER GGS. LTR AUG 29 1977 5587/538.		2-21-78 Aga
2	3/16/79	10 & 11	2-REVISE 12"x8" VENT ON PLAN 10-A" & ELEV. "11-C" AT ℄ SHIP FRS. 205-207 - V.I.S. #4650-22-419.	W.S.	3-16-79 Aga
3	6/25/79	10	1-8"x12" EXH. DUCT CHANGED TO CLEAR PIPE STB'D FR 206-207 ELEV. 11-C		
		8-10	2-8"x12" EXH. DUCT CHANGED TO CLEAR TROLLEY (PORT) FR 194-207 PLAN 8-A & 10-A		
		9-10	3-8"x12" EXH DUCT CHANGED TO CLEAR SHELL STRINGER (PORT) FR 201-203 PLAN 10-A & SECT 98		8 23 79
		4	4-6"x12½" EXH DUCT CHANGED TO CLEAR PIPE P&S FR 205-207 PLAN 4-A	JD	Aga

4651		
4650	27,340 DWT CONTAINERSHIP	8450
HULL	DESIGN	CHARGE

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED
DATE 7-27-77
DRAWN HMF
APPROVED
TRACED
APPROVED
CHECKED REM
APPROVED HBK

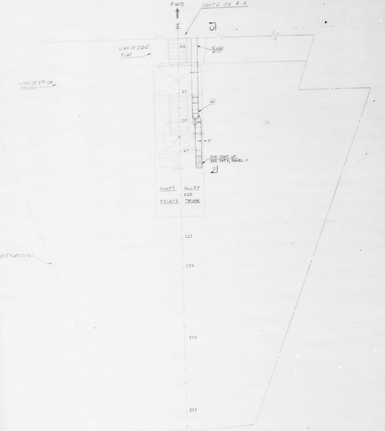
PLAN NO. M-4650-191-24-2
ALT. NO. 3

HVAC A/D 3RD DECK & BELOW
AFT FR. 182

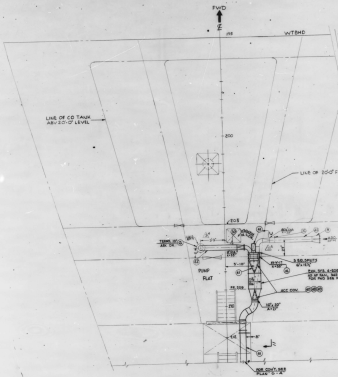
APPROVAL LETTERS					
HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-29-77				
A.B.S.	☒				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

NO.	PLAN NO.	TITLE
	REFERENCE PLANS	

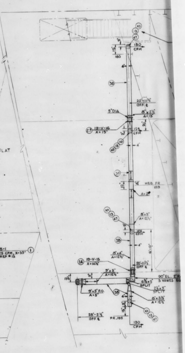
M-681


FWD
CONT'D ON "4-A"
LINE OF 20'-0" FLAT
10" x 20"
A = 21"
210
LINE OF 3RD DK (OVER)
213
41
215
3"
217
FOR CONT. UP
SEE SHT 1, PANEL 11
SHAFT ALLEY
220
ESCAPE TRUNK
223
LINE 38'-0" FLAT (OVER)
225
230
235

PLAN "6-A"
AFT PEAK TANK


FWD
195
WTBHD
LINE OF CO TANK
ABV 20'-0" LEVEL
200
LINE OF 20'-0" FLAT
205
TERM'L 18" ABV. DK
6
1162 CFM
3'-3"
30
1130 CFM N.S. ON.
41
8½" DIA
X = 33"
32
42
8
1150 CFM
27"
9" DIA
X = 33"
42
16"
3 EQ. SPLITS
6" x 12½"
19-V-17
X = 33"
16
3'-10"
PUMP
FLAT
41
EXH. SYS. 4-208-1
40 AF FAN, 3425 CFM, X = 33"
FOR FND SEE REF # 13
1
21½" DIA
FR. 209
ACC COV.
40 48 49
210
10" x 20"
A = 21"
212
8"
41
FOR CON'T. SEE
PLAN "6-A"

PLAN "4-A"
20'-0" FLAT


10
13
47
15"
183
180 CFM
4"
38
20'-11½" OFF ℄
5" DIA
8" x 2½"
A = 13"
23
19-V-16
X = 15"
20"
125 CFM
47 13 10
4"
38
12"
WEB FR 189
A = 2"
10
13
47
8" x 3"
A = 12½"
125 CFM
38
4"
6'-0"
8" x 4"
A = 12½"
24
19-V-15
X = 14½"
20'-11½" OFF ℄
9" x 5"
A = 12½"
13½"
90° EL. 2" R.
3 VANES EQ
6¾" x 5" SPLIT
2¼" x 5" SPLIT
9" x 5" F.O.
A = 5"
38
4"
8" x 3½"
A = 12½"
15"
28'-5½" OFF ℄
FR. 195
10
13
47
130 CFM

AUTOMATION INDUSTRIES, INC.
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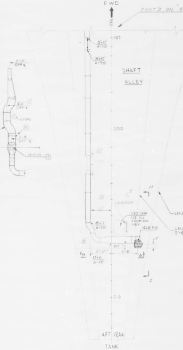
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

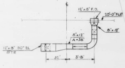
NOV 1980 10X

BUILDERS PLAN NO. M4650-191-24-2

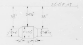
FRAME 2 OF 4


FWD
CONT'D ON "8-A"
195
8"x12"
A=30"
8"x12"
A=38"
SHAFT
ALLEY
3'-10"
OFF ℄
4'-6"
OFF ℄
6"PIPE
41
31
3'-8"
OFF ℄
19-V-18
17
200
LADDER
35"
8"x12"
A=38"
1130 CFM
NS ON
FROM DK
ABV
12"x8" F.O.
7"
2'-11"
3'-8"
12"x8"
A=38"
9
A
C
11
LINE OF 20'-0" FLAT OVER
LINE OF TANK TOP
5'-6" ABL
210
AFT PEAK
TANK

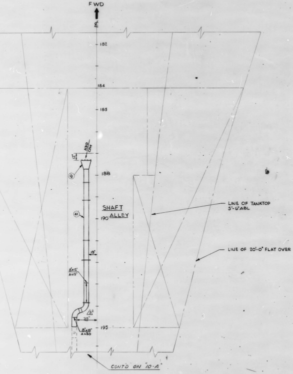
PLAN "10-A"
(UNDER 20'-0" FLAT)


℄
12"x8" F.O.
20'-0" FLAT
8"x12"
8"x12"
A=38"
12"x8" 90° EL
STR
35"
3'-8"

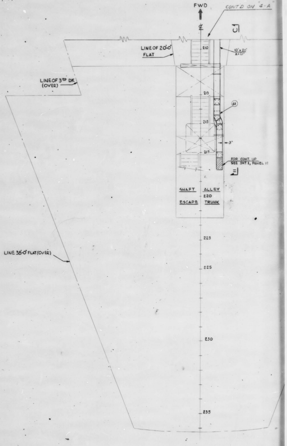
SECTION 9-A


20'-0" FLAT
38"
34½"
38"
12"x8"
13"x5½"
12"x8"
6"
19"
6"

SECTION 9-B 3
PORT LKG OUTB'D


FWD
℄
182
184
185
1130 CFM
12"
9
188
41
SHAFT
ALLEY
190
13"
8"x12"
A=13"
3
35"
195
8"x12"
A=30
LINE OF TANKTOP
5'-6" ABL
LINE OF 20'-0" FLAT OVER
CONT'D ON "10-A"

PLAN "8-A"
(UNDER 20'-0" FLAT)


FWD
CONT'D ON "4-A"
℄
C
LINE OF 20'-0"
FLAT
10"x20"
A=21"
210
LINE OF 3RD DK
(OVER)
213
41
215
3"
217
FOR CONT. UP
SEE SHT 1, PANEL 11
11
SHAFT ALLEY
220
ESCAPE TRUNK
223
LINE 38'-0" FLAT (OVER)
225
230
235

PLAN "6-A"
AFT PEAK TANK

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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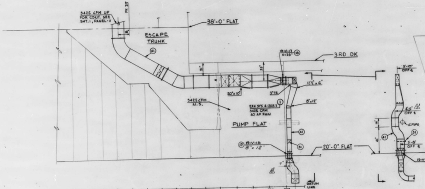
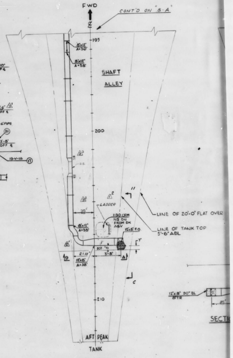
BUILDERS PLAN NO. M4650-191-24-2

FRAME 3 OF 4

12 11 10


3425 CFM UP
FOR CONT. SEE
SHT. 1, PANEL-11
FR 217
38'-0" FLAT
18"
ESCAPE
TRUNK
41
19-V-17
X=33"
16
3RD DK
21"
33"
20"x10"
3"TR
12½" x 6"
3425 CFM
N.S.
EXH SYS 4-208-1
1
3425 CFM
40 AF FAN
8"x12"
PUMP FLAT
41
31
17
19-V-18
8" x 12"
20'-0" FLAT
7"
DATUM
LINE
221
220
219
218
217
216
215
214
213
212
211
210
209
208
207
14"
3'-10"
OFF ℄
4'-6"
OFF ℄
16"
6" PIPE
41"
41
31
3'-8"
OFF ℄
19-V-18
17

ELEV. 11-C
SCALE: 3/8" = 1'-0"


FWD
℄
CONT'D ON "8-A"
195
8"x12"
A=30"
8"x12"
A=38"
SHAFT
ALLEY
200
3
2
1
2
LADDER
35"
1130 CFM
NS DN
FROM DK
ABV
8"x12"
A=38"
12"x8" F.O.
11
LINE OF 20'-0" FLAT OVER
LINE OF TANK TOP
5'-6" ABL
2
7"
207
2'-11"
3'-8"
12"x8"
A=38"
9
A
C
210
AFT PEAK
TANK
12"x8" 90° EL
8"TR
SECTI

PLAN "10-A"
(UNDER 20'-0" FLAT)

12 11 10

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
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BUILDERS PLAN NO. M4650-191-24-2

FRAME 4 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. M4650-191-25-1

FRAME 1 OF 7

LIST OF MATERIALS

ITEM	NAME	QTY.	MATL.	ASTM SPECS.	DESCRIPTION	REMARKS	REQN. No.
1	AXIAL FLOW FAN ~ RECIRC 3-95-1	1	VARIOUS		SIZE AF SPECIAL ITEM 12, REF. 2		22-500027
2	3-95-2	1			13		
3	3-107-1	1			14		
4	3-107-2	1			15		
5	3-111-1	1			16		
6	3-111-2	1			17		
7	3-123-1	1			18		
8	3-123-2	1			19		
9	3-127-1	1			20		
10	3-127-2	1			21		
11	3-139-1	1			22		
12	3-139-2	1			23		
13	CARGO DIFFUSING UNITS	12			RIGHT HAND	ORDER W/ ITEM #59, REF. 11	22-500026-A
14		12			LEFT HAND		
15	HINGED ACCESS DOOR (SPECIAL)	24	STL. GALV		MADE FROM PC. # 22	SEE REF #4 SHT 1 & 2 DET "9-B"	UAO
16	1" × 1/8" FLAT BAR	1200 LF	CARBON STL COLD FIN.	A576 GR. 1020	FOR HINGED & BOLTED A.O.	USED FOR ITEM #15	*
17	1 1/4" × 1/8" GASKET	1200 LF	SBR RUBBER	D2000-CL.AA805			504824-B
18	DAMPER (SLIDING)	96	STL. GALV		MADE FROM PC. #21 8" × 4"	SEE DET 9-C REF 4 SHT 1	UAO
19		384			8" × 5"	"9C"	
20		384			6" × 5"	"9-C"	
21	SHEET STEEL #16 USSG	3836#		A525		USED FOR DUCTS	*
22	10 GA	33720#				& FLGS	*
23	10.2# RT	24524#	STL.	ABS-GR.A			*
24	1/2" W.M. SCREEN	600 □	CARBON STL GALV.	A575-GR. 1008	2×2×.091" DIA	SEE DET 10-A REF #4 SHT 1	504832 A&D
25	SPIRAL CONDUIT PIPE	300'-0"	STL. GALV.	ASTM A-526	7" DIA. #22 USS GA.	UNITED SHT. METAL CO.	504844-M
26	INSULATED PLUG TYPE TERM	12	VARIOUS	COMM'L.	SIZE 8" × 8	REF 8 SH. No 14	*
27	1/2" W.M. SCREEN	192	VARIOUS	A576 GR. 1008	SIZE 8" × 4"	15 & 16	504832-A
28		192			10" × 5"		
29		576			11" × 5"		
30	FIBER, WASHER	912	FIBER	MIL-F-1148B, GR [illegible]	SIZE 9/16" I.D. × 1 1/8" O.D. × 1/4"	USED FOR ISOLATED SPOOL	504824-C
31	FIBER, FERRULE	400	FIBER	[illegible]	17/32" I.D. × 1 1/32" O.D. × 1" LG		
32	STEEL WASHER	656	STEEL-GALV.	COMM'L.	SIZE 1/16" I.D. × 1" O.D.		504830-C
33	BOLT, HEX HD-REG. ANSI-B18.2.1	240		ASTM A-307 GR.B	3/8" DIA 16 NC-2A 1 3/4" LG		504830-B
34	NUT, HEX HVY B18.2.2	400		ASTM A-194	3/8" 16 NC-2B		
35	GASKET, RUBBER	20 SQ.FT.	S.B.R. RUBBER	D2000 GR.AA805	1/4" × 1 1/2"		504824-B
36	DAMPER (SLIDING)	48	STL. GALV.	A525	MADE FROM PC. #21 6" × 4"	SEE DET "9-C" REF #4 SHT 1	UAO
37	1/2" W.M. SCREEN	192		A576 GR. 1008	SIZE 12" × 5"	SEE REF #8 SHT 15 & 16	504832-A
38	SPIRAL CONDUIT PIPE	160 L.F.	STL. GALV	A526	9" DIA. #22 USS GA.	UNITED SHT. METAL CO.	504844-A
39	INSULATION 2" THK. (VAPOR SEAL)	320 SQ.FT.	FIBERGLASS		FURNISHED BY SUB-CONSTRACTOR	REF. 8 SHT. 4 & 5	——
40	ELBOW - 7" DIA. #22 USS GA.	12	STL. GALV.	ASTM-A526	90° (VENDOR # E-90-1)	UNITED SHT. METAL CO.	504844-A
41	ELBOW 7" DIA.	72	STL. GALV.	ASTM-A526	45° (VENDOR # E-45-1)		504844-A 504844-AE
42	BOLTS HEX HD-REG ANSI B18.2.1	256		A307 GR.B	3/8 DIA 16NC 2A 2" LG.	USED FOR HANGERS	SUPPLY
43	TERMINAL, TYPE "J"	12	GALV. STL.	COMM'L.	SIZE 9" DIA	JUNIPER JE-108	*504858-E
44	MACH SCREW RD HD ANSI-B1.1	144	STEEL-GALV.	COMM'L.	#10-24NC-2A- 5/8" LG (SLOT)	SEE DET 8-B REF #4 SHT 1	504830-C
45	HEX HD BOLT-REG	288		A307-GR.B	3/8"-16 NC-2A- 5/8" LG		504830-B
46	"L" FRAME ~ 1"	3840 L.F.	STL. GALV.	A525	SEE DET 9-B (MADE FROM PC. #21)	USED FOR ITEM # 18, 19, & 20	
47	~~RIVETS, TINNER~~	~~192~~	~~STEEL~~	~~COMM'L~~	~~5 LB.~~		
48	MACH. SCREW. SLOT RD.HD ANSI B1.1	1500	STEEL-GALV.	COMM'L.	1/4"-20NC-2A ~ L= 5/8"	15	504830-C & AA
49	ROD ~ 1/4" DIA	24 LF	STL	ABS-GR.A			*
50	HINGE BLADE	48		——	MADE FROM PC #87		UAO
51	HINGE PAD	48	STL.	——			
52	FLAT BAR 1 1/2" × 1/4"	1860 LF		ABS-GR.A		FLANGES	*
53	ANGLE 1 1/2 × 1 1/2 × 1/4"	2580 LF					*
54	GASKET	936 □	IMPREGNATED FELT	COMM'L.	1/8" THK. × 1 1/2" WIDE (7488 LIN. FT)	& C.C. SENSOR	504824-B
55	DOUBLER PLATE	46 □	STL	ABS-GR.A	1" TAK.	REF. #4 SHT. 1 SEC 7-B	*
56	HANGERS	40 LF	STL GALV	A525	1" × 10 GA. F.B (MADE FROM PC #22)	USED FOR ITEM # 20, 26 & 43	
57	WASHERS, LOCK	144	STEEL-GALV.	COMM'L.	1/4" NOM.	FOR R.T.D.	SUPPLY
58	BOLTS HEX HD REG. ANSI B18.2.1	48		A307-GR.B	1/4" × 20NC-2A- 1/2" LONG	USED FOR ITEM # 56	504830-B
59	NUTS, HEX HVY. B18.2.2	6960			1/4"-20 NC-2B	56, 58 & 79	
60	1 1/2" × 1/4" FLAT BAR	4700 LF	STL GALV	ABS-GR.A	REF. 8 SHTS. 11A TO 11D & 12	HANGERS	* [illegible]
61	MACH SCREW RD. HD. ANSI B1.1	3736		COMM'L.	1/4"-20NC-2A - L= 1" (SLOT)	ITEM #60 [illegible]	504830-C
62	NUTS HEX HVY. ANSI B18.2.2	1680		A307-GR.B	1/4"-20NC-2B	& 79	504830-B
63	BOLT HEX HD REG. B18.2.1	4496			3/8"-16NC-2A-L=1 1/4"	FLANGES & C.C. SENSOR	
64	NUTS HEX HVY. ANSI B18.2.2	4496			3/8" × 16 NC-2B	& C.C. SENSOR	
65	WASHER, FLAT	4400		COMM'L.	7/16" I.D × 1" O.D		504830-C
66	92A HYTREL POLYESTER ELASTOMER	600'	RUBBER	ASTM D-1043	1/2" THK × 1 1/2" WIDE - Low Temp Mod	DET. 2-C REF 4 SHT 2	504824-AP
67	MACH SCREW RD. HD. #10	1560	STEEL-GALV.	COMM'L.	24 NC-2A L=1/2" ANSI B1.1	ITEM #15	504830-C
68	ISOLATED SPOOL 14" DIA	48	326 # R.T	ABS-GR.A		REF. #8 SHT. 8	*
69	BOLTS, HEX HD HVY. ANSI B18.2.1	1632	STEEL-GALV.	A307-GR.B	13 NC-2A-L=1" SIZE 1/2"	USED FOR FAN FLANGE	SUPPLY
70		1288			A L=1 1/4"	FND	
71	NUTS, HEX HVY. B18.2.2	1920		A194-GR.1	B	& FLANGE	
72	WASHER, FLAT	1920	STL. GALV.	COMM'L.	9/16" I.D × 1" O.D.		504830-C
73	1" × 1/8" FLAT BAR	680 LF	CARBON STL COLD FINISHED	A576-GR 1020		[illegible]	*
74	WASHER, LOCK	196	STEEL-GALV.	COMM'L.	3/8"	ITEM #13 & [illegible]	SUPPLY
75	BOLTS, HEX HD HVY. ANSI B18.2.1	144		A307 GR.B	5/8" 11 NC-2A L= 1 1/4"	DIFFUSING UNIT FDN	504830-B
76	NUTS, HEX HVY. B18.2.2	144		A194 GR.1	5/8" 11 NC-2B		
77	WASHER, LOCK	144		COMM'L.	5/8"		SUPPLY
78	#10 RD.HD. SELF TAPPING SCREW	240	STL. GALV.	COMM'L.	3/8" LG. (SLOTTED)	COOLING COIL SENSOR	504830-C
79	BOLTS, HEX HD REG. ANSI B18.2.1	7056		A307 GR.B	1/4" × 1" LG 20 NC-2A	FLANGES	504830-A
80	TERMINAL, TYPE "J"	12	STL-GALV.	COMM'L.	7" DIA JUNIPER CATALOG JE-108		504858-B
81	UNION 300# FLAGG FIG. 5428	48	CAST BRONZE	ASTM-B-62	1/4" I.P.S., FEMALE SILB. × 1/4" MPT	FOR C.C. SENSOR	504803
82	TUBING, .540 O.D. × .065" WALL	400 L.FT.	SMLS. COPPER	ASTM-B-75	1/4" I.P.S., ALLOY #122 (NOTE 133 REF. [illegible])		504845
83	90° ELBOW SILBRAZE	12	CAST BRONZE	ASTM-B-62	1/4" I.P.S. FLAGG FIG. 5001		504803
84	COUPLING, 3000# P.S.I.	48	CARBON STL.	ASTM-A-105	1/4" I.P.S., SOCKET WELD ANSI B16.11		504803
85	#10 RD.HD. SELF-TAPPING SCREW	2880	CRES	COMM'L.	3/4" LONG (SLOTTED)	FOR DET. 10-A, 11-A & 12-A	504830-C
86	ISOLATED TAPE "(PAN)" 2" WIDE	23 ROLLS	VINYL	COMM'L.	JOHN MANSVILLE TRANTEX V-20 OR EQ.		504824 [illegible]
87	1 1/4" × 1/4" FLAT BAR	40 L.FT.	STL.	ABS-GR.A	FOR PC. NO. 50 & 51		*
88	THERMOMETER - 90° MOUNTING	24	VARIOUS		FAN RM DUCTS - DET. "5-C"		500026A
89	THERMOMETER - STRAIGHT MOUNT	12	VARIOUS		RETURN AIR - DET. "5-C1"		
90	MOUNTING BRACKET FOR PC. 89	12	STL. GALV	A525	SEE DETAIL "5-C1"	MAKE FROM PC 22	
91	MACHINE SCREW RD. HD - ANSI-B1.1	108	BRASS	B16	3/16" DIA × 1" LONG (SLOTTED)		504830-C
92	NUTS, HEX FOR PC. 91 ANSI B18.22	108	BRASS	B16	FOR PC #91		504830-C
93	AXIAL FLOW FAN ~ RECIRC. 3-M2-1	1	VARIOUS		SIZE AF SPECIAL ITEM 25, REF. 2		22-500027
94	3-M2-2	1			26		
95	3-M14-1	1			27		
96	3-M14-2	1			28		
97	3-M18-1	1			29		
98	3-M18-2	1			30		
99	3-M29-1	1			31		
100	3-M29-2	1			32		
101	3-M33-1	1			33		
102	3-M33-2	1			34		
103	3-M44-1	1			35		
104	3-M44-2	1			36		

L/M CONT. IN ZONES 3-4

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
8	12-28-79	3-4	7- REVISED QTYS OF ITEMS 129 (3600 TO 5200) 130 (3600 TO 5200) 8- ITEM 132 DELETED FROM L/M	J.D.	1-16-80

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1		3-4 3-4 3-4 3-4 3-4 3-4	ADDED ITEMS 106 THRU 120 TO LIST OF MATERIAL. ITEMS 38, 40, 41 REV. 24 USS GA. TO READ 22 USS GA. ITEM 86 IN NAME ADDED 2" WIDE. ITEMS 18, 19, 20, 36 DELETED FROM REQ'N. No (SEE NOTE 96, REF 15) & REV. IN REMARKS ALL DETAILS TO READ DET. "9-C". ADDED ITEMS 121 & 122 REVISED QTYS. OF ITEMS 18 (192 TO 96), 19 (192 TO 384), 20 (576 TO 384) AND 36 (192 TO 96).	B.B.	G.G. SHARP LTR DATED 8-1-77
2	7-19-77	2	1. RELEASED RES. FOR ITEMS 15, 18, 19, 20, 25, 36, 39, 46, 49, 50, 51, 55, AND 87, AND DELETED ITEM 47	G.R.E.	G.G. SHARP LTR. DATED 10-7-77
		2 3-4	2 INCR. ITEM 22 FROM 1102 TO 27,000 LBS 3 REVISED LIST OF STRUCTURAL PENETRATIONS 25-V-13 THRU 25-V-36 FROM 2'-9" APT. TO 29" FWD.	BB	
3	9/14/77	ALL	1-CAPTIONS REVISED & INFORMATION ADDED FOR CLARITY AS PER G.G. SHARP LTR AUG 9 1977 #5587-338.	W.S.	G.G. SHARP LTR. DATED 11-23-77
		2 & 3	2-IT 22 INCR. 27000 TO 32,000 # IT 24 INCR. 529 TO 600 □ IT 48 INCR. 1200 TO 1500		
4	1/18/78	ALL	1-INCLINED LADDERS SHOWN AT AFT BHDS IN PLAN VIEWS.	W.S.	1-26-78
		2 & 3	2-SPEC'S COLUMN CH'GD ON IT. 16 & 73 TO GR. 1020 ON L/M.		
5	7/21/78	4	1-IT. 123-127 ADDED TO L/M FOR DIFF. SENSOR AS SHOWN ON DET. 6-B ON DWG. (191-26-2).	W.S.	
		3	2-RESERV. DELETED FROM IT'S. 88 & 89. REQUISITION No. ADDED.		
	8/21/78	2 & 3	3-IT. 128 ADDED TO L/M. 4-RES. DELETED FROM IT. 66 & VENDOR ADDED.		8-24-78
		5 & 6	5- GEN. NOTE # 7 ADDED.		
6	10/18/78	3 & 4	1-IT. 41 INCR. 24 TO 72 ON L/M. 2-IT 115 INCR 850' TO 1300' ON L/M		10-24-78
		18	3-7" Ø VENTS REVISED ON 31'-4 FLAT AS SHOWN ON "18"-A, B & C. DET. "18-E & G" AS FOR FR. 141 AS NOTED	W.S.	
7	12/14/78	4	1-IT. #129-131 ADDED TO L/M.	W.S.	
8	7/23/79	3-4	1-REVISED QTY. OF ITEM 36 (96 TO 48) & ITEM 140 ADDED AS PER Y.I.S. 4650-22-516 DATED 6-19-79		
	12/26/79	2-3-4	2-REVISED QTYS. OF ITEMS 86 (20 TO 23) 107 (11,000 TO 5,000) AS PER Y-I-S 4650-22-493A DATED 6-22-79		
		3-4	3- ADDED ITEMS 132 THRU 136 AS PER Y.I.S. 4650-22-493A		
		3-4	4-ITEMS 106, 108, 109, 110, 111, 114, 115, 118, & 119 DELETED FROM L/M AS PER Y-I-S 4650-22-394		
		2	5-REVISED QTY OF ITEM 22 (32,000 TO 33,720#) AS PER Y.I.S 4650-22-394		
		2-3-4	6-REVISED QTY. OF ITEMS 117 (360 TO 5200) PER Y.I.S 4650-22-411 & 60 (3140 TO 4700) AS PER Y.I.S. 4650-22-384	J.D.	

HULL	DESIGN	CHARGE
4651 4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 7-18-77
DRAWN B. BAKER APPROVED
TRACED APPROVED
CHECKED R.E.M. APPROVED

PLAN NO. M-4650-191-25-1 ALT. NO. 8

HVAC A/D REFRIG.
CARGO PLAN & L/M

APPROVAL LETTERS					
HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-9-77				
A.B.S.					
U.S.C.G.	8-9-77				
LLOYD'S R.S.					
U.S.P.H.S.					

1. OF 2 DRAWINGS

UNIT 8720

O.D. MARKS
12-14-77

UAO-50135-G

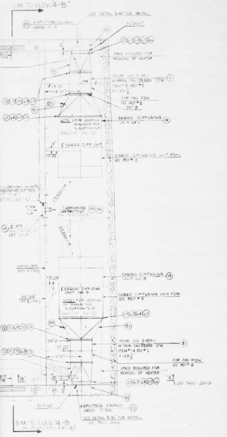
REFERENCE PLANS

NO.	PLAN NO.	TITLE
15	EF-529	LIST OF SPECIAL NOTES FOR VEND. FURN. MAT'L.
14	M4650-402-3	ARRGT. REFRIG. CARGO SPACE
13		
12	E4650-802-15-30	CENTRAL CONTROL SYSTEM
11	M4650-111-10	MACH'Y. ARRGT. DWG.
10	M4650-412-3,4	GAGE & THERMOMETER LIST
9	H4650-129-01-34	LONG'L. BHD'S. 77 1/2 - 153 1/2
8	EF-531	STD. A.C. VENT. CONST. & DET.
7	H4650-129-01-8	TRANSV. SECT. BHDS. FR. 78-93
6	H4650-129-01-9	TRANSV. SECT. BHDS. FR. 94-117
5	H4650-129-01-10	TRANSV. SECT. BHDS. FR. 118-141
4	M4650-191-26-12	HVAC A/D REFRIG. CARGO SECT. & ELEV.
3	H4650-129-18-19	FDNS. MISC. VENT. & ELECT. EQUIPT.
2	M4650-191-5	HVAC FAN LIST
1	M4650-111-21-04	HVAC DIAG. 2ND DK. & BELOW FND. FR. 157

M-682

27C

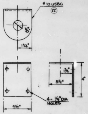
M4650-191-25-1 HVAC A/D REFRIG. CARGO PLAN & L/M


SIM. TO ELEV. "4-B"
SEE DETAIL "5-B1" FOR INSTALL.
(22) 4 SPLITTERS EQUALLY SPACED 3" R
30"X60"
(22)
(23)(63)(64)(65)(66)
2"
30'-7" P15
SPACE REQUIRED FOR REMOVAL OF HEATER
(21)
RECIRC SYS 3-95-1 AF SPECIAL FAN 23,520 CFM ITEM #12 REF #2 X = 29 1/8" (1)
FAN
FR 95
4'-10"
(72)(71)(70)(69)(23)
(88)
(21)
FOR FAN FDN SEE REF # 8 38" Φ
(65)(64)(63)(23)
CARGO DIFFUSING UNIT NO 1 (14)
NOTE: FOR LOCATION OF SENSOR SEE ELEVATION "6-B" DWG (191-26-2)
5"
℄ CARGO DIFF UNIT
FR 98
CARGO DIFFUSING UNIT FDN SEE REF # 3
R.T.D. (ORDERED ON REF #12) FOR MOUNTING DET. SEE SECT. "7-B" DWG (191-26-1)
23,520 CFM
RTRN AIR
THERMOMETER SEE DET "5-C1" ON THIS DWG (89)(90)
(24) 1" WM DWG (191-26-1) DET 10-A
23,520 CFM
UP
LONG'L BHD. REF 4 (P15)
FR 104
5"
35'-3½" OFF ℄ (P15)
CARGO DIFFUSING UNIT NO 3 (13)
℄ CARGO DIFFUSING UNIT NO 3
NOTE: FOR LOCATION OF SENSOR SEE ELEVATION "6-B" DWG (191-26-2)
CARGO DIFFUSING UNIT FDN SEE REF # 3
(23)(63)(64)(65)
(58)
(21)
(72)(71)(69)(70)(23)
38"Φ
FR 107
RECIRC SYS 3-107-1 AF SPECIAL FAN 23,520 CFM ITEM # 14, REF # 2 X = 29 1/8" (3)
(72)(71)(70)(69)(23)
4'-10"
FOR FAN FDN SEE REF # 8
SPACE REQUIRED FOR REMOVAL OF HEATER
"A" ON THIS DWG
30'-7" P15
18"
40
2"
(23)(63)(64)(65)(66)
(22)
30"×60"
4 SPLITTERS EQUALLY SPACED 3" RAD (22)
SEE DETAIL "5-B1" FOR INSTALL. ON THIS DWG
SIM. TO ELEV. "4-B" ON DWG (191-26-2)

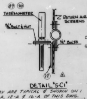
LIST OF STRUCTURAL PENETRATIONS

SPOOL ITEM NO	LOCATION FRAME	LOCATION DISTANCE OFF ℄	LOCATION HEIGHT	SPOOL SIZE	SPOOL R.C	SPOOL MATERIAL	SPOOL LGTH	STRUCTURE PENETRATED	DECK
25-V-1	12" AFT FR 104	36'-2½" (STBD)	~	14" DIA	—	30.6# RT	16"	SECOND DECK	2ND
25-V-2	FR 104	36'-2½" (PORT)	~						
25-V-3	FR 110	36'-2½" (STBD)	~						
25-V-4	FR 120	36'-2½" (PORT)	~						
25-V-5	FR 136	36'-2½" (STBD)	~						
25-V-6	FR 136	36'-2½" (PORT)	~						
25-V-7	12" AFT M-6	36'-2½" (STBD)	~	14" DIA.	—	30.6# RT	16"	SECOND DECK	2ND
25-V-8	M-6	36'-2½" (PORT)	~						
25-V-9	M-22	36'-2½" (STBD)	~						
25-V-10	M-22	36'-2½" (PORT)	~						
25-V-11	M-38	36'-2½" (STBD)	~						
25-V-12	M-38	36'-2½" (PORT)	~						

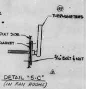
~CONTINUED IN ZONE # 4~


#10 USSG
(22)
7/8"
1⅝"
1¾"
3½"
4"
4-¼" DIA HOLES
3½"

DETAIL "5-C2"
THERMO MOUNTING BRACKET

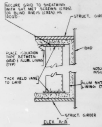

(89) (90)
THERMOMETER
5/16" BOLT & NUT
RETURN AIR SCREENS
¼" BOLTS
(22)

DETAIL "5-C1"

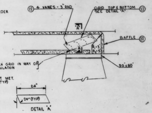

(88)
THERMOMETERS
DUCT SIDE
GASKET
5/16" BOLT & NUT

DETAIL "5-C"
(IN FAN ROOMS)

DETAILS ABV ARE TYPICAL & SHOWN ON:
1- PLAN 8-A, 12-A & 16-A OF THIS DWG.
2- PLAN 4-A, 8-A & 12-A DWG (191-25-2)


SECURE GRID TO SHEATHING WITH SHT. MET. SCREWS (CRES) OR BLIND RIVETS (CRES) AS REQD.
STRUCT. GIRDER
BHD
PLACE ISOLATION TAPE BETWEEN GRID & ALUM. LINING (TYP)
TACK WELD VANE TO GRID
ALUM SHT. MET. LINING (TYP)
STRUCT. GIRDER

ELEV. "A-A"


(22) 4 VANES - 3" RAD
GRID TOP & BOTTOM SEE DETAIL "A" (22)
"A"
BAFFLE (22)
R1 = 3"
R2 = 5"
NOTCH GRID IN WAY OF INSULATION
30"x60"
24"
24" (TYP)
DETAIL "A"

DETAIL "5-B1"
(TYPICAL & SHOWN ON:
1- PLAN 8-A, 12-A & 16-A OF THIS DWG.
2- PLAN 4-A, 8-A & 12-A DWG (191-25-2)

GENERAL NOTES (CONT'D)

7- WELDING OF RISERS TO MAIN HORIZONTAL STRUCTURAL TRUNKS SHOULD BE A SEALING WELD INSIDE OR OUTSIDE WHICH EVER IS ACCESSIBLE FOR WELDING.

GENERAL NOTES

1. DUCT HANGERS ARE TO BE SPACED NOT MORE THAN (8) EIGHT FEET APART.
2. "X" DIMENSIONS CALLED FOR ON DUCT WORK ARE TAKEN FROM UNDER SIDE OF DECK OVER TO CENTER OF DUCT.
3. ALL VERTICAL DUCTS & TRUNKS IN HOLDS SHALL BE OF ¼" STEEL, EXCEPT IN WAY OF COCOONS DUCTS & TRUNKS WILL BE ⅛".
4. FOR LOCATION OF RESISTANCE TEMPERATURE DETECTOR (R.T.D.) SEE KEY PLAN ON REF. #4, SHT #1, PANEL #10.
5. FOR LOCATION OF COOLING COIL SENSORS SEE ELEV. "6-B" ON REF. #4, SHT. #2.
6. FOR SECTIONS & ELEVATIONS SEE REF. # 4

CONT'D ON PANEL 6

LIST OF MATERIAL

ITEM	NAME	QTY.	MATL.	ASTM SPECS.	DESCRIPTION	REMARKS	SOURCE
105	DEFLECTOR PLATE REGULATOR	12	STL	ASTM 307, GR B	STOOL - #16 USSG 15" LG.	MARSTO CO.	504859-H
~~106~~	~~SHEATHING~~	~~925 SQ FT~~	~~ALUMINUM~~	~~B-209-3003-H-14~~	~~.080" THICK~~	~~(15) SHTS 48" x 120"~~	~~504843~~
107	SHEATHING	5,000 SQ FT	ALUMINUM	B-209-3003-H-14	.032" THICK	(550) SHTS 48" x 120"	504843-C
~~108~~	~~ANGLE - 2" x 2" x ¼"~~	~~860'-0"~~	~~ALUMINUM~~	~~B-308-6061-T6~~	~~(43) - 20'-0" LENGTHS~~		~~504841~~
~~109~~	~~ANGLE - 1" x 1" x ⅛"~~	~~860'-0"~~	~~ALUMINUM~~	~~B-308-6061-T6~~	~~(43) - 20'-0" LENGTHS~~		
~~110~~	~~RIVETS - BLIND~~	~~1,700~~	~~ALUMINUM~~	~~COMML.~~	~~⅛" - RIVET No AAEAB~~	~~RIVCO~~	~~504830-S~~ 504830-AU
~~111~~	~~RIVETS - BLIND~~	~~1,700~~	~~ALUMINUM~~	~~COMML.~~	~~3/16" - RIVET No A66AB~~	~~RIVCO~~	504830-AW
112	RIVETS - BLIND	1,700	STNLS. STL.	COMML	3/16" - RIVET No SS6855B	RIVCO	504830-S
113	2" x ¼" FLAT BAR	1700 L.F.	STEEL	ABS GR. A			
~~114~~	~~ADHESIVE~~	~~274 GAL.~~		~~COMML.~~		~~SUPPLIED BY SUB-CONTRACTOR~~	
~~115~~	~~1" x ⅞" FLAT BAR~~	~~1300 L.F.~~	~~STEEL~~	~~ABS GR. A~~			
116	CLOSURE PLATE	220 SQ FT	ALUMINUM	B209-3003-H-14	⅛" THICK	(6) SHTS 48" x 120"	504843
117	CLOSURE PLATE	5200 SQ FT	ALUMINUM	B-209-3003-H-14	3/16" THICK	(130) SHTS 48" x 120"	504843 504843-A
~~118~~	~~INSULATION (2")~~	~~1,000 SQ FT~~	~~URETHANE~~	~~COMML.~~	~~BLOCK URETHANE FOAM TYPE 1 & 2 CL. 2~~	~~SUPPLIED BY SUB-CONTRACTOR~~	—
~~119~~	~~INSULATION (3")~~	~~2700 SQ FT~~	~~URETHANE~~	~~COMML.~~	~~BLOCK URETHANE FOAM TYPE 1 & 2 CL. 2~~	~~SUPPLIED BY SUB-CONTRACTOR~~	—
120	PIPE 8" SEE "18-A"	30'-0"	WELD STL	A-53 TY E GR B	EXTRA STRONG (6" LENGTHS)	SLEEVE THRU 2ND DK.	SHT. # 1653
121	SHEET STEEL 15.3# PLT.	10 SQ FT	STL. GALV	ABS - GR. A		SEE DET "8-C" REF # 4	
122	RIVETS - POP	10,000	CARBON STL.	COMML.	3/16" - RIVET No 66GSB	RIVCO	504830-S
123	¼" I.P.S. SCR'WD COUPLING	48	FORGE STL	A 105	3000# P.S.I. BONNEY FORGE ANSI B16	FOR C.C. SENSOR	504803-B
124	¼" I.P.S. UNION W/GROUND JT. SIL.B.	48	CAST BRONZE	B62	FEMALE W/O RING FLAGG #5201		
125	¼" I.P.S. ADAPTER SIL.B.	96		B62	5060		
126	¼" I.P.S. 90° STREET ELL SIL.B.	48		B62	5107		
127	5/16" Φ HEX HD BOLT & NUT - 1" LG.	100	GALV. STL	A307 GR. B	18 NC - 2A & 2B		504830-AT
128	¼"-14 x 1 HWH #3 HEX. HD. SCREW	15,000	CAD. PLT.		DRILL & SELF TAP #6509999	HILTI INC. (FAST. SYS.)	504830AS
129	5/16" HEX. HD CAP SCREW - TY. 316	5200	ST'N ST'L	A193 GR. B8M	¾" LG.	ANSI B18.2.1 UNC-2A	504830-AX
130	5/16" LOCKWASHERS TY. 316	5200		AISI 316	FOR IT. 130	ANSI B27.1 REGULAR	
131	1" x ⅛" GASKET W/WATER PROOF ADHV.	1800 LF	NEOP/SPONGE	COMM'L.	SC-42 CLOSECELL - PHELPS PACK Co OR EQ.		504824-AE
~~132~~	~~RIVETS - BLIND~~	~~2,300~~	~~STN STL~~	~~COMM'L~~	~~⅛" - RIVET NO SS42SSB TY 316~~	~~RIVCO~~	504830-BE
133	NELSON - PIN	2,000	STEEL		6" LG. NELSON N3P PT. NO 101-074-020		504830-BG
134	NELSON - PIN	500	STEEL		2" LG.		
135	NELSON - PIN	500	STEEL		1½" LG.		
136	INSULATION - CAP	5,000	ALUMINUM		NELSON PT. NO 101-304-002		504830-BG
137							
138							
139							
140	DAMPER 6" x 4"	48	STL GALV.	A-525	MADE FROM PC # 21	SEE DET. 12-B REF. # 4 SHT 1	UAO

NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

CONT. FROM ZONE # 5

LIST OF STRUCTURAL PENETRATIONS

SPOOL ITEM No	LOCATION FRAME	LOCATION DISTANCE OFF ℄	LOCATION HEIGHT	SPOOL SIZE PIPE	SPOOL R.C.	SPOOL MATERIAL	SPOOL LENGTH	STRUCTURE PENETRATED	DECK
25-V-13	29" FWD. FR 109	36'-3½" OFF ℄ (STBD)	~	8" EX. HVY.	~	WELD STL.	6"	SECOND DECK	2ND
25-V-14	109	(PORT)							
25-V-15	M-11	(STBD)							
25-V-16	M-11	(PORT)							
25-V-17	M-27	(STBD)							
25-V-18	M-27	(PORT)							
25-V-19	M-43	(STBD)							
25-V-20	M-43	(PORT)							
25-V-21	125	(STBD)							
25-V-22	125	(PORT)							
25-V-23	141	(STBD)							
25-V-24	29" FWD. 141	36'-3½" OFF ℄ (PORT)	~	8" EX. HVY.	~	WELD STL.	6"	SECOND DECK	2ND
25-V-25	29" FWD. FR 109	36'-3½" OFF ℄ (STBD)	~	8" EX. HVY.	~	WELD STL.	6"	31'-4" FLAT	~
25-V-26	109	(PORT)							
25-V-27	M-11	(STBD)							
25-V-28	M-11	(PORT)							
25-V-29	M-27	(STBD)							
25-V-30	M-27	(PORT)							
25-V-31	M-43	(STBD)							
25-V-32	M-43	(PORT)							
25-V-33	125	(STBD)							
25-V-34	125	(PORT)							
25-V-35	141	(STBD)							
25-V-36	141	36'-3½" OFF ℄ (PORT)	~	8" EX. HVY.	~	WELD STL.	6"	31'-4" FLAT	~

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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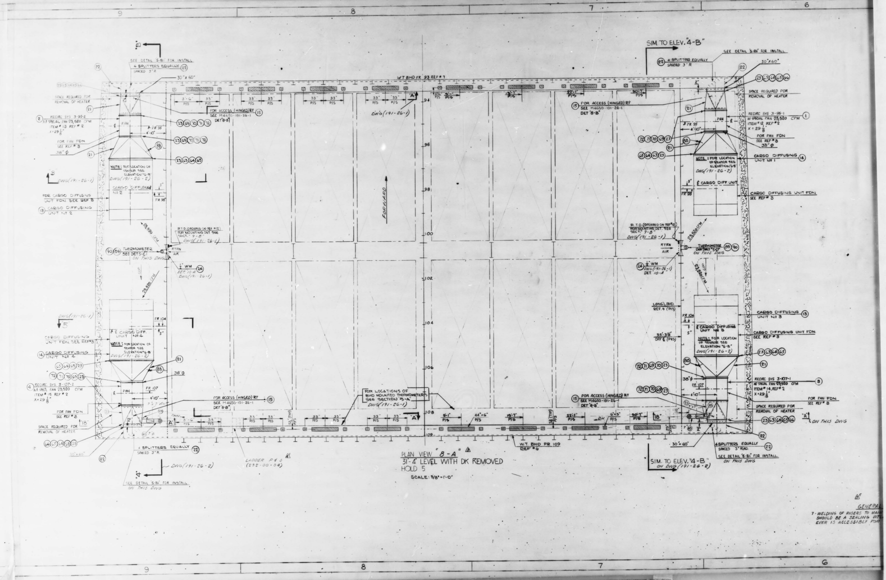
FRAME 2 OF 7


9
8
7
6
SIM. TO ELEV. "4-B"
WT BHD FR 93 REF # 7
4 SPLITTERS EQUALLY SPACED 3" R
SEE DETAIL "S-B" FOR INSTALL
30" x 60"
SPACE REQUIRED FOR REMOVAL OF HEATER
RECIRC SYS 3-95-1
SPECIAL FAN 23,520 CFM
ITEM # 12 REF # 2
FOR FAN FDN SEE REF # 3
38" Φ
CARGO DIFFUSING UNIT No 1
CARGO DIFFUSING UNIT FDN. SEE REF # 3
FOR ACCESS (HINGED) RT SEE M4650-191-28-1 DET "8-B"
RECIRC SYS 3-95-2
SPECIAL FAN 23,520 CFM
ITEM # 13 REF # 2
CARGO DIFFUSING UNIT No 2
FOR CARGO DIFFUSING UNIT FDN. SEE REF 3
THERMOMETER SEE DETS "C" ON THIS DWG
RTRN AIR
WM
R.T.D. (ORDERED ON REF # 12) FOR MOUNTING DET. SEE SECT. "7-B" DWG (191-26-1)
FORWARD
DWG (191-26-1)
DWG (191-26-2)
NOTE: FOR LOCATION OF SENSOR SEE ELEVATION "6-B"
CARGO DIFFUSING UNIT No 3
CARGO DIFFUSING UNIT No 4
CARGO DIFFUSING UNIT FDN. SEE REF # 3
LONG'L BHD REF. # 4 (P&S)
RECIRC SYS 3-107-1
SPECIAL FAN 23,520 CFM
ITEM # 14 REF # 2
RECIRC SYS 3-107-2
ITEM # 15 REF # 2
FOR LOCATIONS OF BHD MOUNTED THERMOMETERS SEE SECTION "5-A"
W.T. BHD FR 109 REF # 6
LADDER P & S (232-00-04)
SIM. TO ELEV. "4-B" ON DWG (191-26-2)
"A" ON THIS DWG
FR 95
FR 98
FR 104
FR 107
33" P/S
94
96
98
100
102
104
106
108
109
GENERAL
7 - WELDING OF RISERS TO MAIN SHOULD BE A SEALING WE EVER IS ACCESSIBLE FOR

PLAN VIEW "8-A"
31'-4" LEVEL WITH DK REMOVED
HOLD 5

SCALE: 3/8" = 1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

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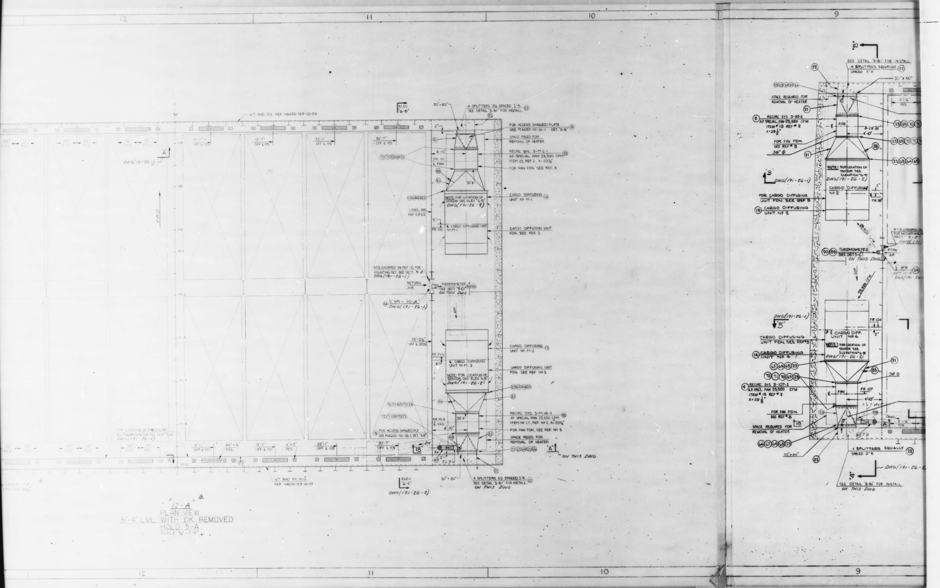
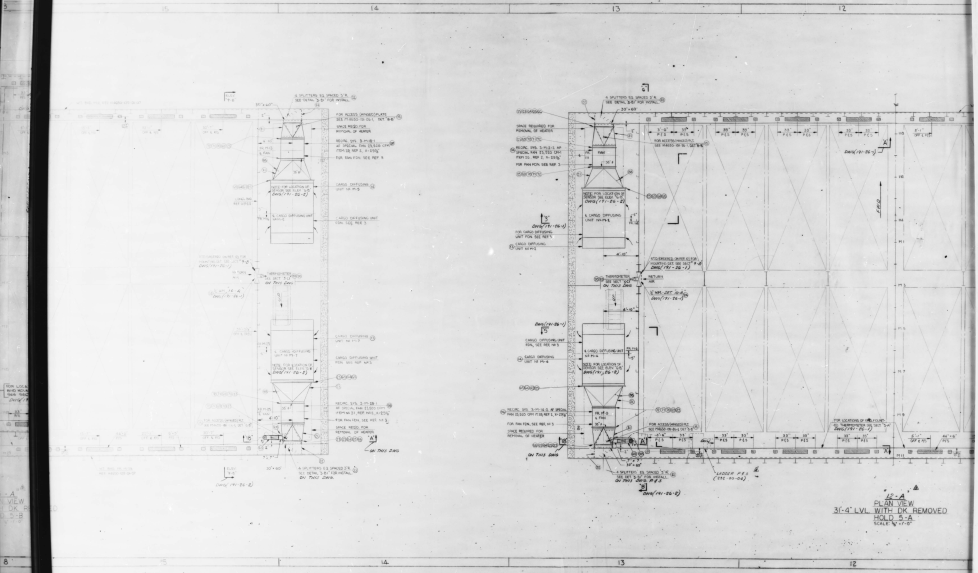
BUILDERS PLAN NO. M4650-191-25-1

FRAME 4 OF 7


12
11
10
9
W.T. BHD 109. REF H4650-129-01-09
ELEV "6-B"
30"x60"
4 SPLITTERS EQ SPACED 3"R. SEE DETAIL "5-B1" FOR INSTALL.
FOR ACCESS (HINGED) PLATE SEE M4650-191-26-1 DET "6-B"
SPACE REQ'D FOR REMOVAL OF HEATER
RECIRC SYS. 3-M-2-1 AF SPECIAL FAN 23,520 CFM ITEM 25, REF 2, X=29 3/8"
FOR FAN FDN. SEE REF 3
CARGO DIFFUSING UNIT Nº M-1
CARGO DIFFUSING UNIT FDN. SEE REF. 3
NOTE: FOR LOCATION OF SENSOR SEE ELEV "6-B" DWG(191-26-2)
℄ CARGO DIFFUSING UNIT Nº M-1
RTD (ORDERED ON REF. 12) FOR MOUNTING DET. SEE SECT. 9-B DWG(191-26-1)
RETURN AIR
THERMOMETER SEE SECT "5-C1" ON THIS DWG
CARGO DIFFUSING UNIT Nº M-3
CARGO DIFFUSING UNIT FDN. SEE REF Nº 3
℄ CARGO DIFFUSING UNIT Nº M-3
RECIRC. SYS. 3-M-16-1 AF SPECIAL FAN 23,520 CFM ITEM Nº 27, REF Nº 2, X=29 3/8"
FOR FAN FDN. SEE REF. Nº 3
FOR ACCESS (HINGED) PLT. SEE M4650-191-26-1, DET. "6-B"
SPACE REQ'D. FOR REMOVAL OF HEATER
"A" ON THIS DWG
W.T. BHD FR. M-11 REF H4650-129-01-07
DWG(191-26-2)
ON THIS DWG
"B"
SEE DETAIL "5-B1" FOR INSTALL
4 SPLITTERS EQUALLY SPACED 3"R.
30"x60"
SPACE REQUIRED FOR REMOVAL OF HEATER
RECIRC SYS 3-95-2 A.F. SPECIAL FAN 23,520 CFM ITEM # 13 REF # 2 X=29 3/8"
FOR FAN FDN SEE REF # 3
38" ϕ
FOR CARGO DIFFUSING UNIT FDN. SEE REF 3
CARGO DIFFUSING UNIT Nº 2
THERMOMETER SEE DETS-C1 ON THIS DWG
RTRN AIR
CARGO DIFFUSING UNIT FDN. SEE REF 3
CARGO DIFFUSING UNIT Nº 4
℄ CARGO DIFF. UNIT Nº 4
RECIRC. SYS. 3-107-2 A.F. SPCL. FAN 23,520 CFM ITEM # 15 REF # 2 X=29 3/8"
FOR FAN FDN. SEE REF # 3
SPACE REQUIRED FOR REMOVAL OF HEATER
4 SPLITTERS EQUALLY SPACED 3"R.
SEE DETAIL "5-B1" FOR INSTALL ON THIS DWG

"12-A"
PLAN VIEW
31'-4" LVL. WITH DK. REMOVED
HOLD 5-A
SCALE 3/8"=1'-0"


15
14
13
12
ELEV. "9-B"
4 SPLITTERS EQ. SPACED 3" R. SEE DETAIL "5-B1" FOR INSTALL. (22)
30" x 60"
2"
FOR ACCESS (HINGED) PLATE SEE M4650-191-26-1, DET. "8-B" (15)
SPACE REQ'D. FOR REMOVAL OF HEATER
4'-10"
FR. M-13 ℄ FAN
RECIRC. SYS. 3-M-18-1 AF SPECIAL FAN 23,520 CFM ITEM 29, REF 2, X=29⅛" (97)
FOR FAN FDN. SEE REF. 3
38" ⌀
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG(191-26-2)
CARGO DIFFUSING UNIT Nº M-5 (14)
LONG'L BHD REF 9 (PES)
FR. M-16
℄ CARGO DIFFUSING UNIT Nº M-5
CARGO DIFFUSING UNIT FDN. SEE REF. 3
R.T.D. (ORDERED ON REF. 12) FOR MOUNTING DET. SEE SECT. "9-B" DWG(191-26-1)
RETURN AIR
THERMOMETER SEE SECT. "5-C1" ON THIS DWG (89)(90)
½" WM. "10-A" DWG(191-26-1) (24)
UP
CARGO DIFFUSING UNIT Nº M-7 (13)
FR. M-23
℄ CARGO DIFFUSING UNIT Nº M-7
CARGO DIFFUSING UNIT FDN. SEE REF. Nº 3
RECIRC. SYS. 3-M-29-1 AF SPECIAL FAN 23,520 CFM ITEM Nº 31, REF. Nº 2, X=29⅛" (99)
FR. M-25 ℄ FAN
FOR FAN FDN, SEE REF. Nº 3
"18"
"A" ON THIS DWG
7" x 7"
ELEV. "9-B" DWG(191-26-2)
4 SPLITTERS EQ. SPACED 3" R. SEE DETAIL "5-B1" FOR INSTALL. ON THIS DWG. (22)
"6"
(23)(63)(64)(65)(66)
SPACE REQUIRED FOR REMOVAL OF HEATER
(23)(69)(70)(71)(72)
RECIRC. SYS. 3-M-2-2 AF SPECIAL FAN 23,520 CFM ITEM 26, REF 2, X=29⅛" (94)
FR. 111
FAN
FOR FAN FDN. SEE REF. 3
3'-6" P&S
33" P&S
FOR ACCESS (HINGED) PLT. SEE M4650-191-26-1, DET. "8-B" (15)
(21)
(88)
(23)(63)(64)(65)
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG(191-26-2)
℄ CARGO DIFFUSING UNIT Nº M-2
"3" DWG(191-26-1)
FOR CARGO DIFFUSING UNIT FDN. SEE REF. 3
CARGO DIFFUSING UNIT Nº M-2 (13)
5"
FR. 114
4'-10"
R.T.D. (ORDERED ON REF. 12) FOR MOUNTING DET. SEE SECT. "9-B" DWG(191-26-1)
THERMOMETER SEE SECT. "5-C1" ON THIS DWG (90)(89)
RETURN AIR
½" WM. - DET. "10-A" DWG(191-26-1) (24)
DWG(191-26-1)
"A"
FWD
110
112
114
M1
M3
M5
M7
M9
M11
5'-1" OFF ℄ P/S
DWG(191-26-1) "5"
CARGO DIFFUSING UNIT FDN, SEE REF. Nº 3
℄ CARGO DIFFUSING UNIT Nº M-4
FR. M-6
CARGO DIFFUSING UNIT Nº M-4 (14)
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG(191-26-2)
(65)(64)(63)(23)
(72)(71)(70)(69)(23)
RECIRC. SYS. 3-M-14-2 AF SPECIAL FAN 23,520 CFM IT. 28, REF 2, X=29⅛" (96)
FR. M-9 ℄ FAN
38" ⌀
FOR FAN FDN, SEE REF. Nº 3
SPACE REQUIRED FOR REMOVAL OF HEATER
FOR ACCESS (HINGED) PLT. SEE M4650-191-26-1, DET. "8-B" (15)
"18" ON THIS DWG
(66)(65)(64)(63)(23)
(40)(109)
7" x 7"
30" x 60"
4 SPLITTERS EQ. SPACED 3" R. SEE DET. "5-B1" FOR INSTALL. ON THIS DWG. P&S (22)
"B" DWG(191-26-2)
LADDER P&S (232-00-04)
FOR LOCATIONS OF BHD. MOUNTED THERMOMETER SEE SECT. "5-A" DWG(191-26-1)
44" x 6" P/S
-A
N VIEW
H DK REMOVED
OLD 5-B

"12-A"
PLAN VIEW
31'-4" LVL. WITH DK. REMOVED
HOLD 5-A
SCALE: ⅜" = 1'-0"

AUTOMATION INDUSTRIES, INC.
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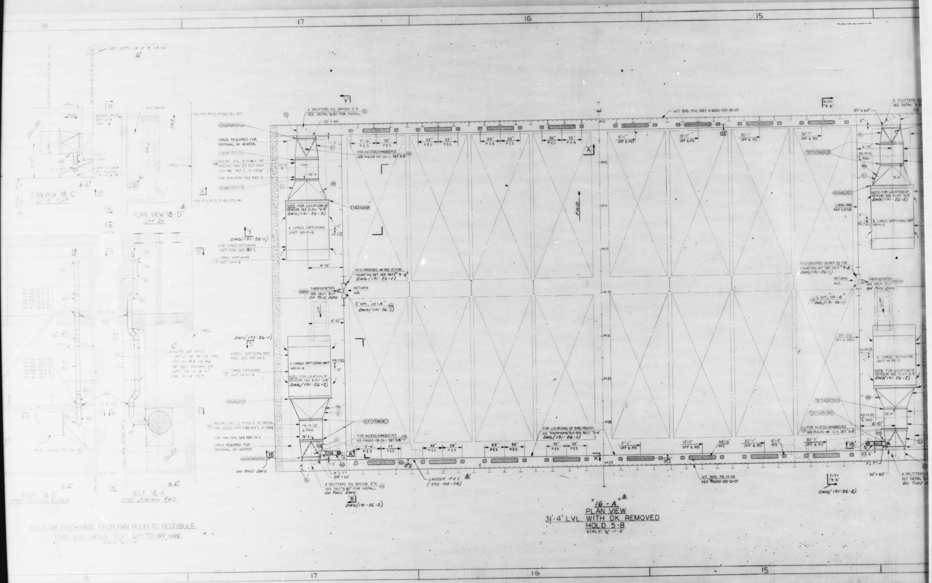

18
17
16
15
PLAN VIEW "18-C"
21'-5" FLAT
PLAN VIEW "18-D"
2ND DK
SHELL
VESTIBULE
4 SPLITTERS EQ. SPACED 3" R. SEE DETAIL "5-B1" FOR INSTALL.
30" x 60"
SPACE REQUIRED FOR REMOVAL OF HEATER
FAN
FOR ACCESS (HINGED) PLT. SEE M4650-191-26-1 DET. "6-B"
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG (191-26-2)
℄ CARGO DIFFUSING UNIT NO. M-6
FOR CARGO DIFFUSING UNIT FDN. SEE REF. 3
CARGO DIFFUSING UNIT NO. M-6
THERMOMETER SEE SECT. "5-C" ON THIS DWG.
RETURN AIR
R.T.D. (ORDERED ON REF. 12) FOR MOUNTING DET. SEE SECT. "9-B" DWG (191-26-1)
℄ CARGO DIFFUSING UNIT NO. M-8
℄ CARGO DIFFUSING UNIT NO. M-5
℄ CARGO DIFFUSING UNIT NO. M-7
FR. M-25 ℄ FAN
W.T. BHD. M11, REF. M4650-129-01-07
W.T. BHD. FR. M-28 REF. M4650-129-01-07
FOR LOCATIONS OF BHD. MOUNTED THERMOMETER SEE SECT. "5-A" DWG (191-26-1)
LADDER P & S (252-00-04)
ELEV. "9-B"
FWD
OFF ℄ P/S
M13
M15
M17
M19
M21
M23
M25
M27
ELEV. "18-B" STBD LOOKING OUTBD
SECT. "18-A" STBD LOOKING FWD
"16 - A"
PLAN VIEW
31'-4" LVL. WITH DK. REMOVED
HOLD 5-B
SCALE: 3/8" = 1'-0"
COLD AIR DISCHARGE FROM FAN ROOM TO VESTIBULE
STBD SIDE SHOWN - PORT SIM. TO OPP. HAND

AUTOMATION INDUSTRIES, INC.
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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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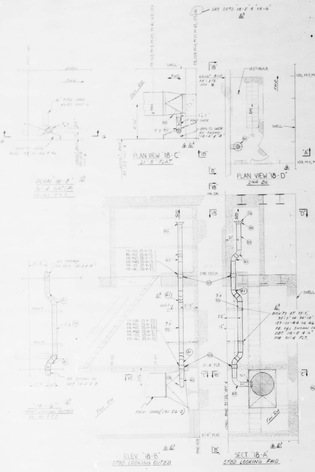
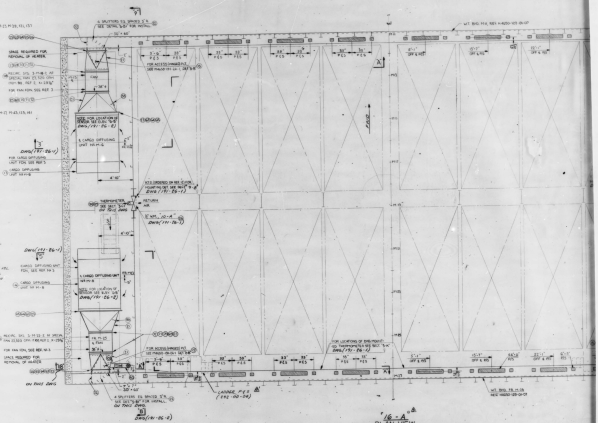
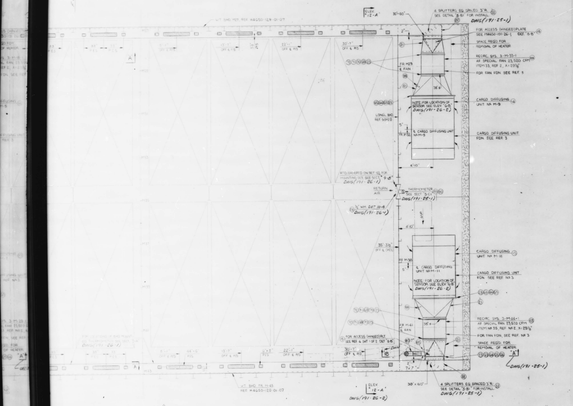

18
SEE DETS "18-E" & "18-G"
SHELL
FWD
6" PIPE DWG 4650-402-6
BRKTS DWG 4650-122-01-44 & 46
PLAN "18-E"
31'-4" FLAT (P)
FR 141 P & S
FR 107, M-9, M-25, M-41, 123, 139
FR 109, M-11, M-27, M-43, 125, 141
FAN RM
FAN
4'-10"
7" VENT OVER
BRKTS OVER AS SHOWN "18-A" & "B"
LONG'L BHD 35'-3½" OFF ℄
PLAN VIEW "18-C"
21'-8" FLAT
VESTIBULE
DN
SHELL
PLAN VIEW "18-D"
2ND DK
"18"
"B"
MN. DK.
2ND DECK
BRKTS AT 39'-5", 35'-2" OR 34'-10" ABL. 129-01-44 OR 46 FR. 141 SHOWN ON DET. "18-E & G" FOR 31'-4 FLT.
SHELL
ELEV. "18-B"
STBD LOOKING OUTB'D
SECT. "18-A"
STBD LOOKING FWD
FAN DWG (191-26-2)
"18-G"
BHD 109

COLD AIR DISCHARGE FROM FAN ROOM TO VESTIBULE
STBD. SIDE SHOWN - PORT SIM. TO OPP HAND
SCALE: ⅜" = 1'-0"


17
16
15
105, M-7, M-23, M-39, 121, 137
109, M-11, M-27, M-43, 125, 141
"9"
4 SPLITTERS EQ. SPACED 3" R. SEE DETAIL "5-B1" FOR INSTALL.
30" × 60"
SPACE REQUIRED FOR REMOVAL OF HEATER
FOR ACCESS (HINGED) PLT. SEE M4650-191-26-1, DET "8-B"
RECIRC. SYS. 3-M-18-2 AF SPECIAL FAN 23,520 CFM ITEM 98, REF 2, X=29⅛"
FAN
38" φ
FOR FAN FDN. SEE REF. 3
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG (191-26-2)
℄ CARGO DIFFUSING UNIT Nº M-6
"3" DWG (191-26-1)
FOR CARGO DIFFUSING UNIT FDN. SEE REF 3
CARGO DIFFUSING UNIT Nº M-6
4'-10"
R.T.D. (ORDERED ON REF. 12) FOR MOUNTING DET. SEE SECT "9-B" DWG (191-26-1)
THERMOMETER SEE SECT. "5-C1" ON THIS DWG
RETURN AIR
½" W.M. "10-A" DWG (191-26-1)
UP
"5" DWG (191-26-1)
CARGO DIFFUSING UNIT FDN, SEE REF. Nº 3
℄ CARGO DIFFUSING UNIT Nº M-8
CARGO DIFFUSING UNIT Nº M-8
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG (191-26-2)
RECIRC. SYS. 3-M-29-2 AF SPECIAL FAN 23,520 CFM IT. 100, REF. 2, X=29⅛"
FR. M-25 ℄ FAN
FOR FAN FDN, SEE REF. Nº 3
SPACE REQUIRED FOR REMOVAL OF HEATER
"18" ON THIS DWG
7" × 7"
30" × 60"
4 SPLITTERS EQ. SPACED 3" R. SEE DET. "5-B1" FOR INSTALL. ON THIS DWG.
"B" DWG (191-26-2)
LADDER P & S (282-00-06)
W.T. BHD. M-11, REF. H4650-129-01-07
W.T. BHD. FR. M-28 REF. H4650-129-01-07
FOR LOCATIONS OF BHD. MOUNTED THERMOMETER SEE SECT. "5-A" DWG. (191-26-1)
3'-6" P & S
33" P & S
5'-1" OFF ℄ P/S
13'-7" OFF ℄ P/S
22'-1" OFF ℄ P/S
44'-6" P/S
6'-5" P/S
"A"
FWD
M-11
M-13
M-15
M-17
M-19
M-21
M-23
M-25
M-27

"16-A"
PLAN VIEW
31'-4" LVL. WITH DK. REMOVED
HOLD 5-B
SCALE: ⅛" = 1'-0"


ELEV. "12-A"
30"×60"
4 SPLITTERS EQ. SPACED 3"R. (22)
SEE DETAIL "5-B1" FOR INSTALL.
DWG(191-25-1)
(22)
FOR ACCESS (HINGED) PLATE
SEE M4650-191-26-1, DET. "8-B" (15)
SPACE REQ'D. FOR
REMOVAL OF HEATER
RECIRC. SYS. 3-M-33-1
AF SPECIAL FAN 23,520 CFM (104)
ITEM 33, REF 2, X=29⅛"
FOR FAN FDN. SEE REF. 3
2"
30'-7" OFF ℄ P/S
(21)
(72)(71)(70)(69)(23)
FR M29
℄ FAN
(88)
(21)
38"⌀
(65)(64)(63)(23)
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B"
DWG(191-26-2)
CARGO DIFFUSING UNIT Nº M-9 (14)
LONGL BHD. REF. 9(P&S)
5"
FR M32
℄ CARGO DIFFUSING UNIT Nº M-9
CARGO DIFFUSING UNIT
FDN. SEE REF. 3
4'-10"
RTD (ORDERED ON REF. 12) FOR
MOUNTING DET. SEE SECT. "9-B"
DWG(191-26-1)
RETURN AIR
THERMOMETER (89)(90)
SEE SECT. "5-C1"
DWG(191-25-1)
(24) ½" WM. DET. 10-A
DWG(191-26-1)
UP
4'-10"
35'-3½" OFF ℄ (P&S)
CARGO DIFFUSING UNIT Nº M-11 (13)
FR M38
5"
℄ CARGO DIFFUSING UNIT Nº M-11
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B"
DWG(191-26-2)
CARGO DIFFUSING UNIT
FDN. SEE REF. Nº 3
(23)(63)(64)(65)
(21)
(88)
(72)(71)(69)(70)(23)
(72)(71)(69)(70)(23)
FR M41
℄ FAN
38"⌀
RECIRC. SYS. 3-M-34-1
AF SPECIAL FAN 23,520 CFM (103)
ITEM Nº 35, REF. Nº 2, X=29⅛"
FOR FAN FDN. SEE REF. Nº 3
(15) FOR ACCESS (HINGED) PLT.
SEE REF. 4 SHT 1 OF 2 DET. "8-B"
(40) 7"
(105)
(21)
SPACE REQ'D. FOR
REMOVAL OF HEATER
30'-7" OFF ℄ P/S
DWN
18
(23)(63)(64)(65)(66)
"A"
DWG(191-25-1)
2"
7"×7"
(22)
30"×60"
4 SPLITTERS EQ. SPACED 3"R. (22)
SEE DETAIL "5-B1" FOR INSTALL.
DWG(191-25-1)
ELEV. "12-A"
DWG(191-26-2)
"A"

"4-A"
PLAN VIEW
31'-4 LVL WITH DK. REMOVED
HOLD 5-C
SCALE 3/16"=1'-0"

ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	9/14/77	ALL	1-CAPTIONS REVISED & INFORMATION ADDED FOR CLARITY PER G.G. SHARP LTR AUG. 9 1977 # 5587-538.	W.S.	G.G. SHARP LTR DATED 11-23-77
2	1/20/78	ALL	1-INCLINED LADDERS SHOWN AT AFT BHDS IN PLAN VIEWS.	W.S.	1-26-78
3	7/16/79	20 18 15	1-IN PARTIAL PLAN "20-A", RELOCATED "4" NAT. SUP. DUCT. IN HOLD #5-B. FROM 12" AFT TO 36" FWD FR# M-22 - TO CLEAR VALVE OPER. ROD. 2-REVISED PLANS-18-C, 18-A + 15-A. TO AGREE WITH ELEV. "2-A" ON DWG M-4650-191-26-1	RL	7-24-79

HULL	DESIGN	CHARGE
4651 4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD., 21219

SCALE 3/16"=1'-0"
DATE 7-12-77
DRAWN R. BAKER
APPROVED
TRACED
APPROVED
CHECKED R.E.M.
APPROVED

PLAN NO. M4650-191-25-2
ALT. NO. 3

HVAC A/D REFRIG.
CARGO PLAN

	APPROVAL LETTERS				
HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-9-77				
A.B.S.					
U.S.C.G.	8-9-77				
LLOYD'S R.S.					
U.S.P.H.S.					

2 OF 2 DRAWINGS

GENERAL NOTES

1. SEE M4650-191-25-1 FOR LIST OF MATERIAL & GENERAL NOTES.

NO.	PLAN NO.	TITLE
14		
13		
12		
11		
10		
9		
8		
7		
6		
5		
4		
3		
2		
1		SEE GENERAL NOTE Nº 1

REFERENCE PLANS

		DATE OF ISSUE				
		4650-51	4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
	ALTERATION	0	0	1	2	3
	ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAIL	OWNERS	5		3	3	3
	AMERICAN BUREAU					
	LLOYD'S R.S.					
	U.S.M.A.					
	U.S. NAVY					
	U.S.C.G.	3		3		
	JOINER CONT'R.					
INSPECTION	OWNER'S INSP.		1	1	1	1
	AM. BU. INSP.					
	LLOYD'S INSP.					
	U.S.M.A. INSP.		1	1	1	1
	U.S. NAVY INSP.					
	U.S.C.G. INSP.					
OFFICE	HULL DRAFT.-21	1	1	1	1	1
	MACH. DRAFT.-22	1	2	2	2	2
	ELEC. DRAFT.-23	1	1	1	1	1
	OUTFIT. DRAFT.-25	1	1	1	1	1
	ESTIMATING					
MISC.	PRODUCTION (SCD)					
	ORDER DEPT.					
	JOINER CONT. YARD					
	TOTAL ENG'R. DIST.	[illegible]	[illegible]	13	13	13
	YARD DISTRIBUTION					
YARD	PIECE-RATE-11	1	1	1	1	
	TEST DEPARTMENT					
	STEEL PLANNING	1	1	1	1	
STRUCTURAL	GROUND ASSEMBLY	2	2	2	2	
	NO. WAY					
	NO. WAY					
	NO. WAY					
	NO. WAY					
	STRUCT. SUPER.	2	2	2	2	
	OPTICAL DETAIL-66	2	2	2	2	
	WET DOCK					
MACH'Y & OUTFIT.	PIPE SHOP-52	2	2	2	2	
	OUTFIT. #1 PIER	1	1	1	1	
	PIPE DRAFT.-52	1	2	2	2	
	BOILER SHOP-58					
	OUTSIDE MACH.-60	1	1	1	1	
	ELECTRIC SHOP-70	1	1	1	1	
	SHEET MET. SHOP-74	4	4	4	4	
	COPPER SHOP-51					
	PAINT SHOP-75	1	1	1	1	
	WELDING					
OTHER	MOLD LOFT-41	1	1	1	1	
	BRACKET SHOP					
	SHIP SUPT.				1	
	E. BROOKS				1	
	R. MILLER				1	
	TOTAL YARD DIST.	[illegible]	[illegible]	28	29	

4650-51-ALT 0
4650-51-ALT 1
4650-51-ALT 2
ALT 3

M-683

25.3 90 FT

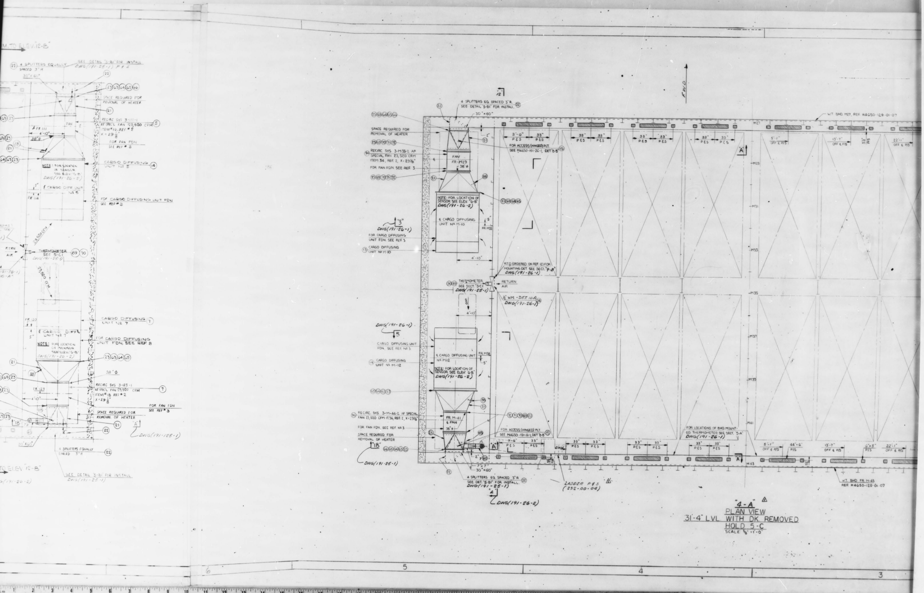
AUTOMATION INDUSTRIES INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910
NOV 1980 10X
BUILDERS PLAN NO. M4650-191-25-2
FRAME 1 OF 7

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-25-2

FRAME 2 OF 7


FWD
4 SPLITTERS EQ. SPACED 3" R. SEE DETAIL "5-B1" FOR INSTALL.
30"×60"
SPACE REQUIRED FOR REMOVAL OF HEATER
RECIRC. SYS. 3-M33-2 AF SPECIAL FAN 23,520 CFM ITEM 34, REF. 2, X=29⅛"
FOR FAN FDN SEE REF. 3
FAN FR-M29 38"φ
FOR ACCESS (HINGED) PLT. SEE M4650-191-26-1, DET "8-B"
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG (191-26-2)
℄ CARGO DIFFUSING UNIT Nº M-10
FR M32
"3" DWG (191-26-1)
FOR CARGO DIFFUSING UNIT FDN: SEE REF. 3
CARGO DIFFUSING UNIT Nº M-10
4'-10"
R.T.D. (ORDERED ON REF. 12) FOR MOUNTING DET. SEE SECT. "9-B" DWG (191-26-1)
THERMOMETER SEE SECT. "5-C1" DWG (191-25-1)
RETURN AIR
½" WM - DET. 10-A DWG (191-26-1)
UP
DWG (191-26-1) 5
CARGO DIFFUSING UNIT FDN, SEE REF. Nº 3
℄ CARGO DIFFUSING UNIT Nº M12
FR M38
CARGO DIFFUSING UNIT Nº M-12
RECIRC. SYS. 3-M-44-2, AF SPECIAL FAN 23,520 CFM IT.36, REF. 2, X=29⅛"
FOR FAN FDN, SEE REF. Nº 3
FR. M-41 ℄ FAN 38"φ
"18" DWG (191-25-1)
7"×7"
4 SPLITTERS EQ. SPACED 3" R SEE DET. "5-B1" FOR INSTALL. DWG (191-25-1)
"A" DWG (191-26-2)
LADDER P&S (232-00-04)
FOR LOCATIONS OF BHD MOUNTED THERMOMETER SEE SECT. "5-A" DWG (191-26-1)
W.T. BHD. M27, REF. M4650-129-01-07
W.T. BHD. FR. M-43 REF. M4650-129-01-07
3'-6" P&S
33" P&S
5'-1" OFF ℄ P/S
13'-7" OFF ℄ P/S
22'-1" OFF ℄ P/S
44'-6" P/S
M27
M29
M31
M33
M35
M37
M39
M41
M43
TO ELEV. "12-B"
4 SPLITTERS EQUALLY SPACED 3" R
SEE DETAIL "5-B1" FOR INSTALL DWG (191-25-1)
THERMOMETER SEE 5-C1 DWG (191-25-1)
RTRN AIR
CARGO DIFFUSING UNIT Nº 5
CARGO DIFFUSING UNIT Nº 7
FOR CARGO DIFFUSING UNIT FDN, SEE REF. 3
RECIRC. SYS. 3-23-1 AF SPEC'L FAN 23,520 CFM ITEM 18 REF. 2 X=29⅛"
7
6
5
4
3

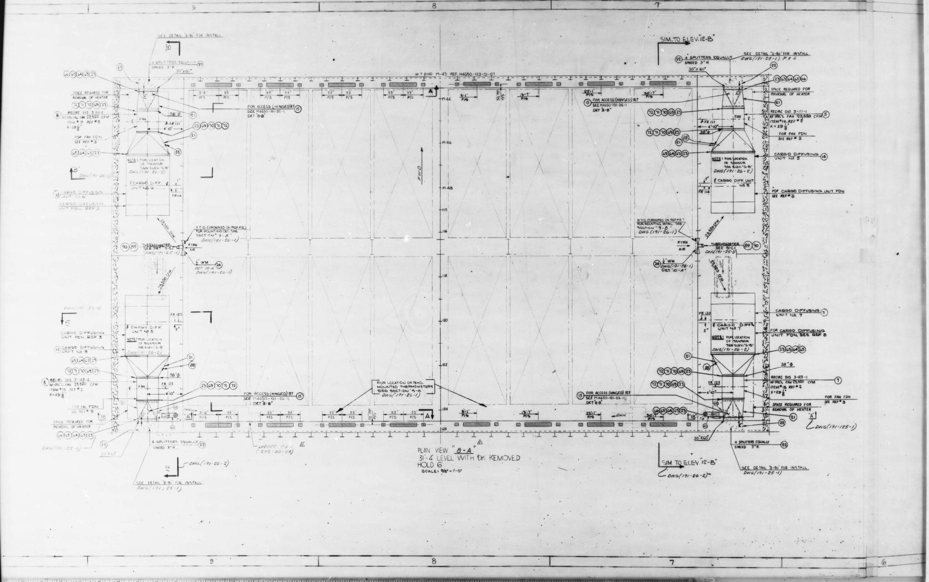
"4-A"
PLAN VIEW
31'-4" LVL. WITH DK. REMOVED
HOLD 5-C
SCALE ⅛" = 1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

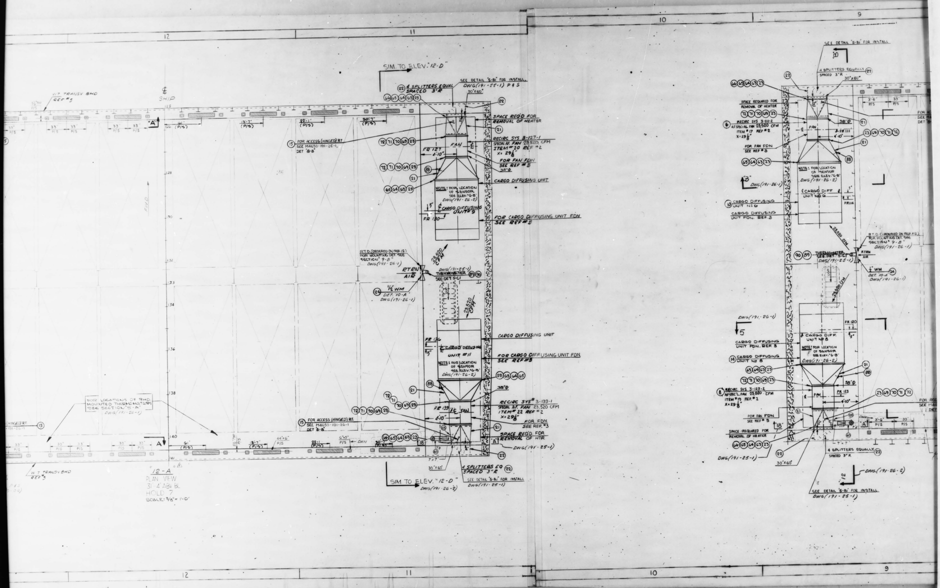
NOV 1980 10X

BUILDERS PLAN NO. M4650-191-25-2

FRAME 3 OF 7


9
8
7
6
SEE DETAIL "S-B1" FOR INSTALL
4 SPLITTERS EQUALLY SPACED 3" R
30" x 60"
W.T. BHD M-43 REF. M4650-129-01-07
SPACE REQUIRED FOR REMOVAL OF HEATER
RECIRC SYS 3-111-2 AF SPECIAL FAN 23,520 CFM ITEM #17 REF #2 X=29 1/8"
FOR FAN FDN SEE REF #3
38" Φ
4'-10"
FR 111
FAN
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "G-B" DWG (191-26-2)
℄ CARGO DIFF. UNIT NO 6
CARGO DIFFUSING UNIT No 6
CARGO DIFFUSING UNIT FDN. REF 3
FR 114
23,520 CFM
FOR ACCESS (HINGED) RT SEE M4650-191-26-1, DET "8-B"
3'-6" P/S
33" P/S
FWD
M-44
M-46
M-48
115
116
118
120
122
124
125
R.T.D. (ORDERED ON REF #12) FOR MOUNTING DET. SEE SECTION "9-B" DWG (191-26-1)
THERMOMETER SEE DET "S-C1" DWG (191-25-1)
RTRN AIR
1/2" WM DET. 10-A DWG (191-26-1)
SIM. TO ELEV. "12-B"
SEE DETAIL "S-B1" FOR INSTALL DWG (191-25-1) P # 5
22'-1" P/S
20'-7" P/S
5'-1" P/S
13'-7" P/S
RECIRC SYS 3-111-1 AF SPEC'L FAN 23,520 CFM ITEM #16, REF #2 X = 29 1/8"
CARGO DIFFUSING UNIT No 5
℄ CARGO DIFF. UNIT No 5
FOR CARGO DIFFUSING UNIT FDN SEE REF #3
CARGO DIFFUSING UNIT No 7
FOR CARGO DIFFUSING UNIT FDN, SEE REF 8
℄ CARGO DIFF. UNIT No 7
FR 120
℄ CARGO DIFF. UNIT No 8
CARGO DIFFUSING UNIT No 8
CARGO DIFFUSING UNIT FDN. REF 8
RECIRC SYS 3-123-2 AF SPEC'L FAN 23,520 CFM ITEM #19 REF #2 X=29 1/8"
RECIRC SYS 3-123-1 AF SPEC'L FAN 23,520 CFM ITEM #18 REF #2 X=29 1/8"
FR 123
FOR LOCATION OF BHD. MOUNTED THERMOMETERS SEE SECTION "5-A" DWG (191-26-1)
LADDER FR 125 (255-00-04)
SIM. TO ELEV "12-B" DWG (191-26-2)
DWG (191-125-1)
DWG (191-26-1)
DWG (191-25-1)

PLAN VIEW "8-A"
31'-4 LEVEL WITH DK REMOVED
HOLD 6
SCALE: 3/8" = 1'-0"


12
11
10
9
SIM. TO ELEV. "12-D"
W.T. TRANSV BHD
REF #5
℄ SHIP
"A"
33" P/S
61" (P/S)
13'-7" (P/S)
22'-1" (P/S)
30'-7" (P/S)
FWD
125
126
128
130
132
133
134
136
138
140
141
15 FOR ACCESS (HINGED) RT SEE M4650-191-26-1, DET "8-B"
22 4 SPLITTERS EQUAL SPACED 3"R
SEE DETAIL "5-B1" FOR INSTALL. DWG(191-25-1) P&S
30"X60"
66 65 64 63 23
22
SPACE REQ'D FOR REMOVAL OF HEATER
21
RECIRC SYS 3-127-1
SPECIAL A.F. FAN 23,520 CFM
ITEM #20 REF #2
X= 29 1/8"
72 71 70 69 23
FAN
FR 127
4'-10"
FOR FAN FDN SEE REF #3
38"Φ
88
21
CARGO DIFFUSING UNIT
65 64 63 23
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "G-B" DWG(191-26-2)
5"
℄ CARGO DIFFUSING UNIT #9
FR 130
FOR CARGO DIFFUSING UNIT FDN SEE REF #3
R.T.D. (ORDERED ON REF. 12) FOR MOUNTING DET. SEE SECTION "9-B" DWG(191-26-1)
23,520 CFM
RTRN AIR
DWG(191-25-1) THERMOMETER SEE DET 5-C1
89 90
24 1/2" WM DET. "10-A" DWG(191-26-1)
UP
23,520 CFM
CARGO DIFFUSING UNIT
FR 136
5"
℄ CARGO DIFFUSING UNIT #11
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "G-B" DWG(191-26-2)
FOR CARGO DIFFUSING UNIT FDN. SEE REF #3
23 63 64 65
88
21
38"Φ
72 71 70 69 23
RECIRC SYS # 3-139-1
SPECIAL A.F. FAN 23,520 CFM
ITEM # 22 REF #2
X= 29 1/8"
FR 139
℄ FAN
4'-10"
FOR FDN. SEE REF. #3
21
15 FOR ACCESS (HINGED) RT. SEE M4650-191-26-1 DET "8-B"
SPACE REQ'D FOR REMOVAL OF HTR.
"A"
DWG(191-25-1)
44"x6" P/S
6"x5" P/S
DWN
66 65 64 63 23
18"
40
7"Φ
7"x7"
30"X60"
4 SPLITTERS EQ SPACED 3"R 22
22
SEE DETAIL "5-B1" FOR INSTALL DWG(191-25-1)
SIM TO ELEV. "12-D" DWG(191-26-2)
FOR LOCATIONS OF BHD. MOUNTED THERMOMETERS SEE SECTION "5-A" DWG(191-26-1)
W.T. TRANSV BHD REF #3
12-A
PLAN VIEW
31'-4" ABV BL
HOLD 7
SCALE: 3/8" = 1'-0"
SEE DETAIL "5-B1" FOR INSTALL
"B"
4 SPLITTERS EQUALLY SPACED 3"R 22
30"X60"
22
66 65 64 63 23
SPACE REQUIRED FOR REMOVAL OF HEATER
72 71 70 69 23
6 RECIRC SYS 3-111-2
A.F. SPECIAL FAN 23,520 CFM
ITEM #17 REF #2
X= 29 1/8"
FAN
FR 111
4'-10"
38"Φ
21
23 69 70 71 72
21
FOR FAN FDN SEE REF #3
88
65 64 63 23
3'-6" P/S
33" P/S
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "G-B" DWG(191-26-2)
"3" DWG(191-26-1)
℄ CARGO DIFF UNIT NO 6
5"
FR 114
13 CARGO DIFFUSING UNIT Nº 6
CARGO DIFFUSING UNIT FDN. REF. 3
23,520 CFM
R.T.D. (ORDERED ON REF. #12) FOR MOUNTING DET. SEE SECTION "9-B" DWG(191-26-1)
90 89 THERMOMETER SEE DET. 5-C1 DWG(191-25-1)
RTRN AIR
1/2" WM DET. 10-A DWG(191-26-1) 24
UP
23,520 CFM
DWG(191-26-1)
5
FR 120
5"
℄ CARGO DIFF. UNIT Nº 8
NOTE: FOR LOCATION OF SENSOR SEE ELAV. "G-B" DWG(191-26-2)
CARGO DIFFUSING UNIT FDN. REF 3
14 CARGO DIFFUSING UNIT Nº 8
65 64 63 23
21
88
72 71 70 69 23
38"Φ
8 RECIRC. SYS. 3-123-2
AF SPEC'L FAN 23,520 CFM
ITEM #19 REF #2
X= 29 1/8"
FAN
FR 123
4'-10"
23 69 70 71 72
21
105
2"
FOR FAN FDN SEE REF #3
18"
SPACE REQUIRED FOR REMOVAL OF HEATER
66 65 64 63 23
DWG(191-25-1)
22
30"X60"
7"Φ
40
7"x7"
DWN
"A"
3'-6" P/S
33" P/S
4 SPLITTERS EQUALLY SPACED 3"R 22
12
DWG.(191-26-2)
SEE DETAIL "5-B1" FOR INSTALL DWG(191-25-1)

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-25-2

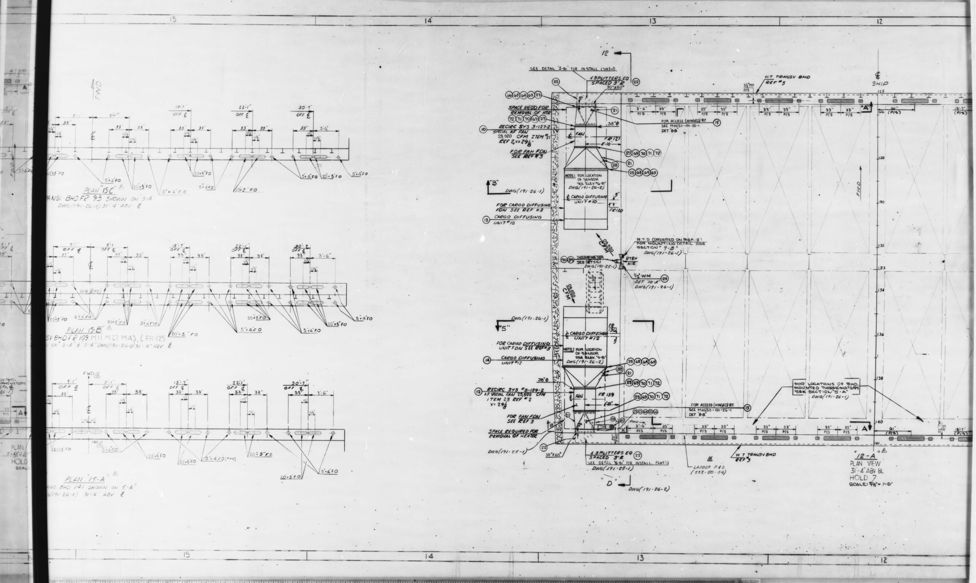
FRAME 4 OF 7

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-25-2

FRAME 5 OF 7


15
14
13
12
FWD
PLAN "15-C"
ANSV BHD FR 93 SHOWN ON "3-A"
DWG(191-26-1) 31'-4" ABV ℄
PLAN 15-B"
SV BHD FR 109, M11, M27, M43, & FR-125
N ON "3-A" & "5-A" DWG(191-26-1) 31'-4" ABV ℄
109 (ETC)
FWD
141
PLAN "15-A"
ANS BHD 141 SHOWN ON "5-A"
G(191-26-1) 31'-4" ABV ℄
5'-1" OFF ℄
13'-7" OFF ℄
22'-1" OFF ℄
30'-7" OFF ℄
33"
3'-6"
11½"
5"x4" FO
20"x5" FO
12"
SEE DETAIL "5-B1" FOR INSTALL (SHT-1)
4 SPLITTERS EQ SPACED 3" R
30"x60"
(22)
(66)(65)(64)(63)(23)
SPACE REQD FOR REMOVAL OF HTR
(72)(71)(70)(69)(23)
(10) RECIRC SYS 3-127-2
SPECIAL AF FAN 23,520 CFM ITEM #21 REF 2, x=29⅛"
FAN
FR 127
38"φ
4'-10"
FOR FAN FDN SEE REF #3
(21)
(23)(69)(70)(71)(72)
(88)
(23)(63)(64)(65)
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG(191-26-2)
"3"
DWG(191-26-1)
℄ CARGO DIFFUSING UNIT #10
5"
FR 130
FOR CARGO DIFFUSING FDN SEE REF #3
(13) CARGO DIFFUSING UNIT #10
23,520 CFM
R.T.D (ORDERED ON REF. 12) FOR MOUNTING DETAIL SEE SECTION "9-B" DWG(191-26-1)
(90)(89) THERMOMETER SEE DETS C1 DWG(191-25-1)
RTRN AIR
1/2" WM DET "10-A" DWG(191-26-1) (24)
UP
"5"
DWG(191-26-1)
FR 136
℄ CARGO DIFFUSING UNIT #12
FOR CARGO DIFFUSING UNIT FDN SEE REF #3
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "6-B" DWG(191-26-2)
(14) CARGO DIFFUSING UNIT #12
(23)(63)(64)(65)
(12) RECIRC SYS #3-139-2
A.F. SPECIAL FAN 23,520 CFM ITEM 23 REF #2 x=29⅛
FR 139
1'-10"
FOR FAN FDN SEE REF 3
SPACE REQUIRED FOR REMOVAL OF HEATER
18"
(105)
(80)
DWG(191-25-1)
4 SPLITTERS EQ SPACED 3" R (22)
SEE DETAIL "5-B1" FOR INSTALL. (SHT-1)
DWG(191-25-1)
"D"
DWG(191-26-2)
W.T. TRANSV BHD REF #5
5½" TYP P/S
℄ SHIP
125
126
128
130
132
133
134
136
138
140
141
"A"
P/S
61" (P/S)
13'-7" (P/S)
FOR ACCESS (HINGED) RT SEE M4650-191-26-1 DET "8-B" (15)
FOR LOCATIONS OF BHD. MOUNTED THERMOMETERS SEE SECTION "5-A" DWG(191-26-1)
LADDER P&S (282-00-06)
W.T. TRANSV BHD REF #5
"12-A"
PLAN VIEW
31'-4" ABV BL
HOLD 7
SCALE: 3/8" = 1'-0"

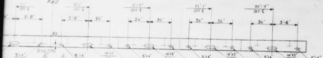
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

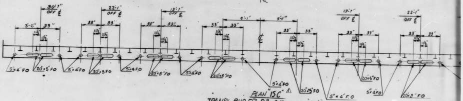
BUILDERS PLAN NO. M4650-191-25-2

FRAME 6 OF 7

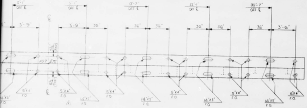
18 17 16 15


℄
FWD
5'-1" OFF ℄
13'-7" OFF ℄
22'-1" OFF ℄
30'-7" OFF ℄
3'-9"
36"
3'-6"
93
5'x4' F.O.
14"x5" F.O.
5½" TYP.

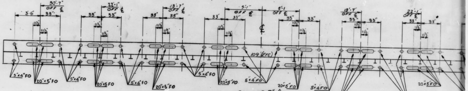
PLAN "18-C"
TRANSV. BHD. FR 93
AS SHOWN ON "3-A" DWG.
(191-26-1) 25'-4" ABV ℄


FWD
30'-7" OFF ℄
22'-1" OFF ℄
13'-7" OFF ℄
5'-1"
3'-6"
33"
11½"
℄
5"x4" F.O.
20"x5" F.O.

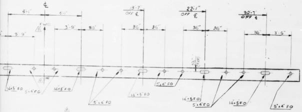
PLAN "15-C"
TRANSV BHD FR 93 SHOWN ON "3-A"
DWG(191-26-1) 31'-4" ABV ℄


5'-1" OFF ℄
13'-7" OFF ℄
22'-1" OFF ℄
30'-7" OFF ℄
℄
3'-9"
36"
3'-6"
5"x4" F.O.
14"x5" F.O.
5½" TYP.

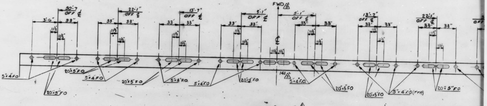
PLAN "18-B"
TRANSV BHD FR 109, M11, M-27, M-43 & 125
AS SHOWN ON "3-A" & "5-A" DWG(191-26-1)
25'-4" ABV ℄


30'-7" OFF ℄
22'-1" OFF ℄
13'-7" OFF ℄
5'-1" OFF ℄
3'-6"
33"
11½"
℄
109 (ETC)
5"x4" F.O.
20"x5" F.O.

PLAN "15-B"
TRANSV BHD FR 109, M-11 M-27, M-43, & FR-125
SHOWN ON "3-A" & "5-A" DWG(191-26-1) 31'-4" ABV ℄

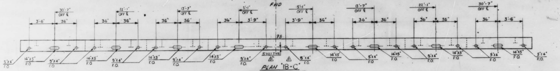

5'-1"
℄
FWD
13'-7" OFF ℄
22'-1" OFF ℄
30'-7" OFF ℄
3'-9"
36"
3'-6"
141
14"x5" F.O.
5"x4" F.O.

PLAN "18-A"
...SV BHD FR 141 SHOWN ON
DWG(191-26-1) 25'-4" ABV ℄

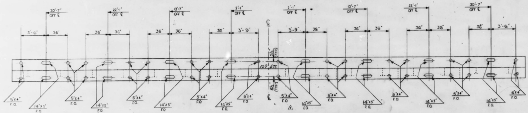

FWD
30'-7" OFF ℄
22'-1" OFF ℄
13'-7" OFF ℄
5'-1" OFF ℄
3'-6"
33"
11½"
℄
141
5"x4" F.O.
20"x5" F.O.
5"x4" F.O. (TYP)

PLAN "15-A"
TRANS BHD 141 SHOWN ON "5-A"
DWG(191-26-1) 31'-4" ABV ℄

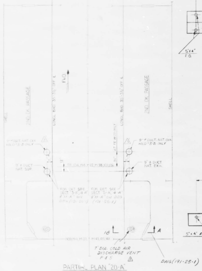
18 17 16 15


℄
FWD
30'-7" OFF ℄
22'-1" OFF ℄
13'-7" OFF ℄
5'-1" OFF ℄
3'-6"
36"
3'-9"
93
5 1/2" TYP
5"x4" F.O.
14"x5" F.O.

PLAN "18-C"
TRANSV. BHD. FR 93
AS SHOWN ON "3-A" DWG.
(191-26-1) 25'-4" ABV ℄


℄
30'-7" OFF ℄
22'-1" OFF ℄
13'-7" OFF ℄
5'-1" OFF ℄
3'-6"
36"
3'-9"
109 ETC
5 1/2" (TYP)
5"x4" F.O.
14"x5" F.O.

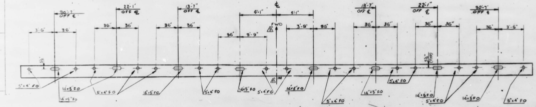
PLAN "18-B"
TRANSV. BHD. FR.109, M-11, M-27, M-43 & 125
AS SHOWN ON "3-A" & "5-A" DWG(191-26-1)
25'-4" ABV ℄


FWD
SHELL
2ND DK PASSAGE
18
A
109, M11, M27, M43, 125, 141

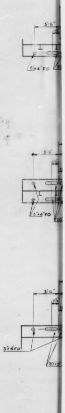
7" DIA. COLD AIR
DISCHARGE VENT
P & S

DWG(191-25-1)

PARTIAL PLAN "20-A"
HOLDS 5, 5-A, 5-B, 5-C, 6 & 7 SHOWN
SCALE: NONE
(2ND DK)


℄
FWD
30'-7" OFF ℄
22'-1" OFF ℄
13'-7" OFF ℄
5'-1"
3'-6"
36"
3'-9"
141
5"x4" FO
14"x5" FO

PLAN "18-A"
TRANSV. BHD. FR. 141 SHOWN ON
"5-A" DWG(191-26-1) 25'-4" ABV ℄


3'-6"
5"x4" FO
20'-5"

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910
NOV 1980 10X

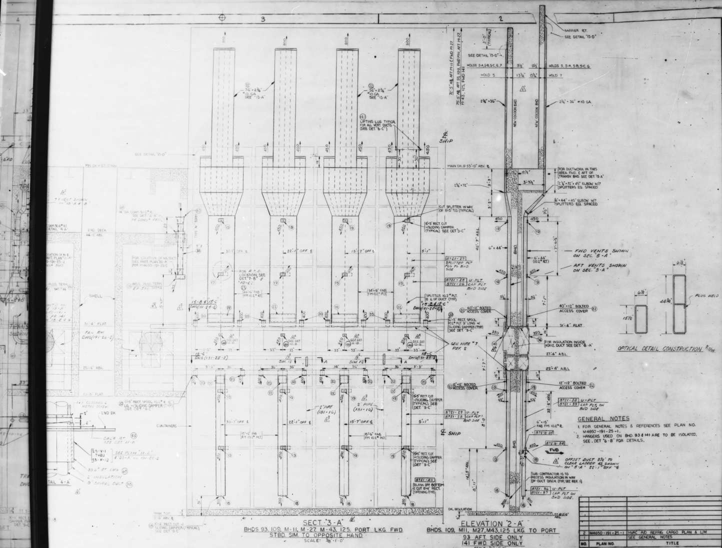
BUILDERS PLAN NO. M4650-191-25-2
FRAME 7 OF 7

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-26-1

FRAME 1 OF 5


BARRIER PLT.
SEE DETAIL "13-D"
36" × 2¾" #10 GA. SEE "13-A"
LIFTING LUG TYPICAL FOR ALL VERT. DUCTS (SEE DET. "8-C")
℄ SHIP
HOLDS 3-4, 5-B, 5-C, 6, 7
HOLD 5
HOLD 7
NEW COCOON BHD
2¾" × 36" #10 GA.
MAIN DK. @ 53'-0" ABV. ℄
FOR DUCTWORK IN THIS AREA FWD. & AFT OF TRANSV. BHD. SEE DET. "13-A"
6" × 44"
FWD VENTS SHOWN ON SEC. "5-A"
AFT VENTS SHOWN ON SEC. "3-A"
40" × 12" BOLTED ACCESS COVER
31'-4" FLAT
FOR INSULATION INSIDE HORIZ. DUCT SEE DET "6-A"
27'-4" ABL
25'-4" A.BL
12" × 12" BOLTED ACCESS COVER
8721-38 U-PLT
8721-39 CAP PLT. ON BHD SIDE
GEN. NOTE #7 REF. 2
CUT SPLITTER IN WAY OF 8×5 T.D. (TYPICAL)
16×5 RECT CUT W/SLIDING DAMPER (TYPICAL) SEE DET "3-C"
SPLITTER 10.2" PLT. ℄ & OF DUCT (TYP)
BLANK OFF BOTTOM & CUT 8×4 RECT. OPENING (TYP.)
2" PIPE (191-16)
OFFSET DUCT 3½" TO CLEAR LADDER AS SHOWN ON "5-A" 22'-1" OFF ℄
SUB-CONTRACTOR IS TO RECESS INSULATION IN WAY OF DUCT DISCH. (TYP. SEE REF. 1)
FWD.
DK. INSULATION
CONTAINERS
SHELL
FAN RM DWG (191-26-2)
2ND DECK
15'-8" 15'-C
6 ½
15 ½
44 ¾
6 ½
PLUG WELD

SECT "3-A"
BHDS 93, 109, M-11, M-27, M-43, 125, PORT LKG FWD
STBD. SIM. TO OPPOSITE HAND
SCALE: 3/8"-1'-0"

ELEVATION "2-A"
BHDS. 109, M11, M27, M43, 125 LKG. TO PORT
93 AFT SIDE ONLY
141 FWD. SIDE ONLY
SCALE 3/8"-1'-0"

OPTICAL DETAIL CONSTRUCTION 9/17/78

GENERAL NOTES

1. FOR GENERAL NOTES & REFERENCES SEE PLAN NO. M4650-191-25-1.
2. HANGERS USED ON BHD. 93 & 141 ARE TO BE ISOLATED. SEE. DET "6-B" FOR DETAILS.

NO.	PLAN NO.	TITLE
2	M4650-191-25-1	HVAC A/D REFRIG CARGO PLAN & L/M
1		SEE GENERAL NOTES

REFERENCE PLANS

ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	8/3/77	3 3	1. REVISED VENT RISERS IN COCOONS AS SHOWN 2. DELETED RUN OF COLD AIR SUPPLY DUCT TO VESTIBULE IN SECT "3-A" TO CORRECT.	BB	G.G.S. LTR DATED 7-29-77
2	9/15/77	ALL	1-CAPTIONS REVISED AND INFORMATION ADDED FOR CLARITY. 2-INSUL. THICK. REDUCED TO INCREASE DUCT SIZE ON 6-A, 14-A & 15-A AS INDICATED. ADHESIVE N° CHG'D TO CORRECT. 3-KEY PLAN 10-C CHG'D TO SHOW ALL R.T.D. LOCATIONS. THIS REV. PER G.G. SHARP LT'R AUG. 9, 1977 #5587-338	W.S.	G.G. SHARP LTR. DATED 11-28-77
3	1/12/78	2 & 5 3, 5, 10, 12, 14 & 15 7 & 14	1-OFFSET ADDED TO 15×6 VENT 22'-1" OFF ℄ AT T.T. ON "5-A" TO CLEAR "LADDER." "2-A" CHG'D TO SUIT. 2.-PIPING SHOWN THRU HORIZ. VENT TRUNKS ON "3-A," "5-A," 14-A & 15-A. PLANS "10-B" & 12-A" ADDED FOR CLARIFICATION 3-3" DIM. LOCATING SHEATHING ON AFT SIDE OF 36" WF ADDED TO DETS "6-A" & 14-A.	W.S.	1-31-78
4	7/20/78	4	1-DET. "4-A" REVISED FOR CLARIFICATION.	W.S.	7-24-78
5	10/18/78	6 & 15 3 & 5	1-2" × 4/8" F.B. INDICATED ON DET. "6-A" & "15-A." 2-NOTE ADDED TO SEC. "3-A" & "5-A" FOR 7" ∅ VENT DET "D" ON DWG. 191-25-2.	W.S.	10-24-78
6	4/9/79	11 11 4	1-IN PLAN-11-A-RELOCATED VENT PENETRATION (M-22) FROM 12" AFT OF FR.#M-22 TO 36" FWD OF FR.#M-22 P/S 2-IN DET. 11-B-DELETED FRAME LOCATIONS THE ABV. TO CLEAR VLV. OPER. ROD 3-CHANGED HT. OF INSUL. PLUG TERMINAL FROM 6'-6" TO 5'-0" ABV. 31'-4" FLAT FOR ACCESS.	R.L.	7-26-79
	7/23/79	12 & 3 2	4-DET. 12-B ADDED AS PER Y.I.S. ITEM 140 WAS 36 PER Y.I.S. M4650-22-516	J.D.	
7	12-28-79	6-7	1-REVISED ELEV. 7-A & DETAIL 6-A AS PER Y.I.S. 4650-22-493-A.	J.D.	6-14-80

HULL	DESIGN	CHARGE
4651		
4650	27, 340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8"-1'-0"
DATE 7-12-77
DRAWN B.B.
APPROVED
TRACED
APPROVED
CHECKED R.E.M.
APPROVED

PLAN NO. M4650-191-26-1
ALT. NO. 7

HVAC A/D REFRIG.
CARGO SECT. & ELEV.

APPROVAL LETTERS					
HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-9-77				
A.B.S.	☒				
U.S.C.G.	8-9-77				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

1 OF 2 DRAWINGS (DETAILS)

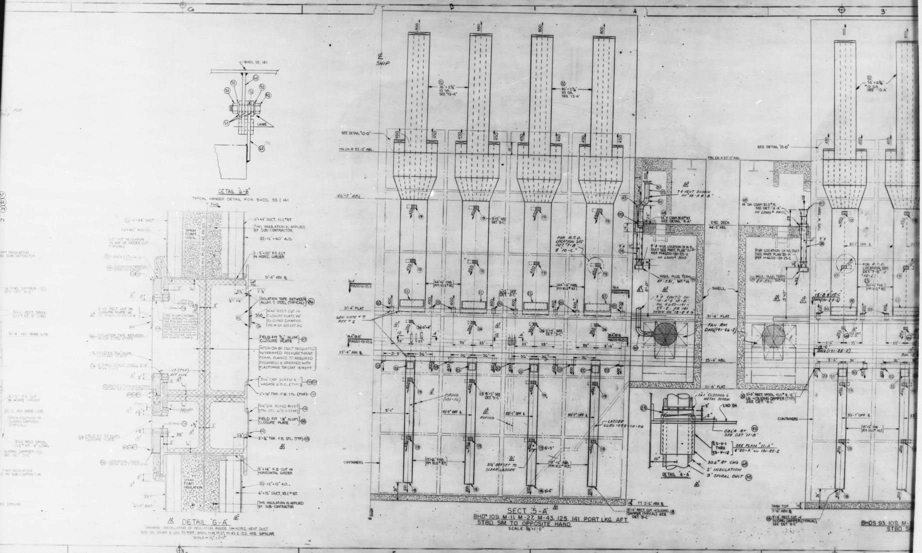
UNIT 8720

O. D. MARKS	
12-14-77	5-17-78
2-8-78	5-9-78
11-27-78	

M-684

	DATE OF ISSUE
ALTERATION	0, 1, 2, 3, 4, 5, 6, 7
ENGINEERING DISTRIBUTION	[illegible]
OWNERS	[illegible]
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	[illegible]
JOINER CONT'R.	
OWNER'S INSP.	[illegible]
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	[illegible]
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT.-21	[illegible]
MACH. DRAFT.-22	[illegible]
ELEC. DRAFT.-23	[illegible]
OUTFIT. DRAFT.-25	
ESTIMATING	
PRODUCTION (SCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
J. SIMMONS	[illegible]
PIECE RATE-11	[illegible]
TEST DEPARTMENT	
GROUND ASSEMBLY	[illegible]
H. LANG	[illegible]
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	[illegible]
OPTICAL DETAIL-48	[illegible]
WET DOCK	
PIPE SHOP-52	[illegible]
OUTFIT. #P I PIER	[illegible]
PIPE DRAFT.-32	[illegible]
BOILER SHOP-58	
OUTSIDE MACH.-60	[illegible]
ELECTRIC SHOP-70	[illegible]
SHEET MET. SHOP-74	
COPPER SHOP-51	
PAINT SHOP-76	[illegible]
WELDING	
MOLD LOFT-41	[illegible]
BRACKET SHOP	
E. BROOKS	[illegible]
TOTAL YARD DIST.	[illegible]

M4650-191-26-1 HVAC A/D REFRIG. CARGO SECT. & ELEV.



DETAIL "6-B"
TYPICAL HANGER DETAIL FOR BHDS. 93 & 141
BHDS. 93, 141
SAME
6"×44" DUCT, 10.2# RT
THIS INSULATION IS APPLIED BY SUB-CONTRACTOR
22-12"×40" A.O.
2-5"×20" F.O. CUT IN HORIZ. GIRDER
31'-4" ABV. ℄
SPRAY FOAM INSUL.
CUT OUT INSULATION IN WAY OF GIRDER CUT (TYPICAL)
ISOLATION TAPE BETWEEN ALUM. & STEEL (TYPICAL) 86
4"×6" RECT. CUT IN CLOSURE PLATE W/ SLIDING DAMPER PC # 36 SEE DET. 9-C
350
FIELD FIT 3/16" ALUM. CLOSURE PLATE 117
INTERIOR OF DUCT INSULATED W/SPRAYED POLYURETHANE FOAM, PLANED TO REQUIRED THICKNESS & SPRAYED WITH ELASTOMER TOP COAT 15 MDFT
5/16" CAP SCREW & WASHER 6" O.C. (TYP.)
2"×1/4" THK. F.B. STL. (TYP.) 113
3/16" DIA. BLIND RIVET STN. STL. 6" O.C. (TYP.) 112
FIELD FIT 1/8" ALUM. CLOSURE PLATE
2×1/4" THK. F.B. STL. (TYP.)
5"×14" F.O. CUT IN HORIZONTAL GIRDER
22-12"×12" A.O.
6"×15" DUCT, 10.2# RT.
THIS INSULATION IS APPLIED BY SUB-CONTRACTOR
17 (TYP.) AFT SIDE
DETAIL "6-A"
SHOWING INSTALLATION OF INSULATION INSIDE OF HORIZ. VENT DUCT
BHD 109 SHOWN & LKG TO PORT, BHDS. M-11, M-27, M-43 & 125 ARE SIMILAR
SCALE ~ 1 1/2" = 1'-0"
℄ SHIP
36"×2 3/4" 10 GA. SEE "13-A"
SEE DETAIL "13-D"
MN. DK. ℄ 53'-0" ABL.
46'-7" ABL.
FOR R.T.D. LOCATION SEE DET. "7-B" & "10-C."
14" Ø COAM 30.6# RT SEE DETAIL "4-A"
9"Ø FOR LOCATION OF N.E. DUCT SEE PART PLAN "20-A" REF. M4650-191-25-2 IN LONG'L BHD
INSUL. PLUG TERM. EF-531, SHT #14
2ND DECK 44'-0" ABL
SHELL
31'-4" FLAT
FAN RM. DWG (191-26-2)
25'-4" ABL
21'-8" FLAT
GEN. NOTE # 7 REV. # 2
PIPING (191-14)
LADDER 4650-552-00-04
3 1/2" OFFSET TO CLEAR LADDER
CONTAINERS
TT 5'-6" ABV. ℄
8"×4" RECT. CUT W/SLIDING DAMPER (TYPICAL) SEE DET. "9-C" 18
SECT. "5-A"
BHD'S 109, M-11, M-27, M-43, 125, 141 PORT LKG. AFT
STBD. SIM TO OPPOSITE HAND
SCALE: 3/8" = 1'-0"
1"×1" CLOSING L METAL SCREW
2ND DK
23
OBL'R RT SEE DET. "11-B" 55
25-V-1 THRU 25-V-12 SEE PLAN "11-A" & "20-A" ON 191-25-2
30.6# RT CMG 68
2" INSULATION
9" SPIRAL DUCT 38
DETAIL "4-A"
6"×5" RECT. SPOOL 10.2# & 12" LG. W/SLIDING DAMPER (TYP.) SEE DET. "9-C" 20
TANK TOP 5'-6" ABV. ℄
8"×4" RECT. CUT W/ SLIDING DAMPER (TYPICAL) SEE DET. "9-C" 18
BHDS 93, 109, M-
STBD. SI
5
4
3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-26-1

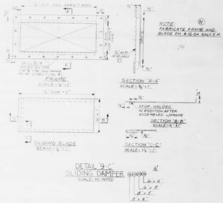
FRAME 2 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

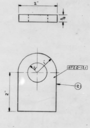
NOV 1980 10X

BUILDERS PLAN NO. M4650-191-26-1

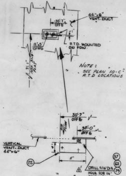
FRAME 3 OF 5


"L" DIM SEE ARRG'T DWG.
"A"
"W" DIM SEE ARRG'T DWG.
DRILL 9/32" Ø HOLES EQ SPA FOR 1/4" × 3/4" SELF TAPPING HEX HD SCREW (CAD ℞)
FRAME
SCALE ~ 1/4" = 1"
1/2" W.M. 14 GA GALV. (27)
SECTION "A-A"
SCALE ~ 3/8" = 1"
NOTE: (21)
FABRICATE FRAME AND BLADE FM. #16 GA. GALV. S.M.
"L" DIM + 1"
"W" + 1"
"B"
"C"
"D"
SLIDING BLADE
SCALE ~ 1/4" = 1"
STOP, WELDED IN POSITION AFTER ASSEMBLED W/FRAME
SECTION "B-B"
SCALE ~ 1/2" = 1"
SECTION "C-C"
SCALE ~ 1 1/2" = 1"
(18) (19) (20) (26)
6" × 4"
6" × 5"
8" × 5"
8" × 4"

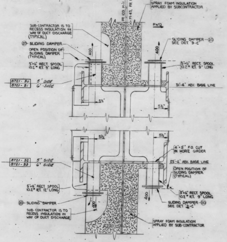
DETAIL "9-C"
SLIDING DAMPER
SCALE: AS NOTED


2"
1/4"
8720-121
(12)

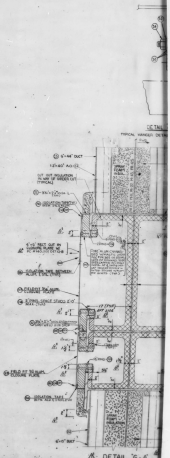
DETAIL "8-C"
LIFTING LUG
(TWO FOR EACH VERT. DUCT ABV. MN. DK.)
SCALE: FULL


44" × 6" VENT. DUCT
30'-7" OFF ℄
8" × 5" OPNG
R.T.D. MOUNTED ON FDN.
71'-1" ABV. 31'-4" FLAT
NOTE:
SEE PLAN "10-C" FOR R.T.D. LOCATIONS
30'-7" OFF ℄
AIR FLOW
30'-0" OFF ℄
VERTICAL VENT. DUCT 44" × 6"
11"
(22)
(57) (62) (79)
DRILL 5/16" DIA HOLE FOR 1/4" BOLT, NUT & LOCK WASHER (TEMPLATE FROM SENSOR)

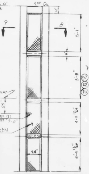
DET. "7-B"
SCALE: 1 1/2" = 1'-0"


FR 109, M-11, M-27, M-43, FR 125
SPRAY FOAM INSULATION APPLIED BY SUBCONTRACTOR
FWD
SUB-CONTRACTOR IS TO RECESS INSULATION IN WAY OF DUCT DISCHARGE (TYPICAL)
(20) SLIDING DAMPER
OPEN POSITION OF SLIDING DAMPER (TYPICAL)
400
SLIDING DAMPER (20) SEE DET. "9-C"
5" × 6" RECT. SPOOL 10.2# RT. 9" LONG
8721-30 5" SIDE
8721-31 6" SIDE
31'-4" ABV. BASE LINE
5 1/2"
4" × 5" F.O. CUT IN HORIZ GIRDER
8721-32 5" SIDE
8721-33 6" SIDE
25'-4" ABV. BASE LINE
5" × 6" RECT. SPOOL 10.2# RT. 12" LONG
OPEN POSITION OF SLIDING DAMPER (TYPICAL)
5" × 6" RECT. SPOOL 10.2# RT. 9" LONG
(20) SLIDING DAMPER
SLIDING DAMPER (20) SEE DET. "9-C"
SUB-CONTRACTOR IS TO RECESS INSULATION IN WAY OF DUCT DISCHARGE
SPRAY FOAM INSULATION APPLIED BY SUB-CONTRACTOR

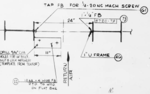
ELEV "7-A"
BHD. 109 SHOWN ℄ LKG. TO PORT, BHD. M-11, M-27, M-43, 125 ARE SIMILAR
SCALE ~ 1 1/2" = 1'-0"


DETAIL
TYPICAL HANGER DETAIL
FWD
(23) 6" × 44" DUCT
12" × 40" A.O. (22)
CUT OUT INSULATION IN WAY OF GIRDER CUT (TYPICAL)
(22) 3 1/16" × 2" × 10 GA. L (TYP.)
(86) ISOLATION TAPE (TYP.) BETW. STL. & ALUM.
SPRAY FOAM INSUL.
FR 109, M-11, M-27, M-43, FR 125
6 PINS (TYP.)
2 PINS (134)
4" × 6" RECT CUT IN CLOSURE PLATE W/ PC #140, SEE DET 12-B
.032" ALUM. CHANNEL BED W/MASTIC UNDER PRC #PR 365 OR EQUAL. SECT. OF CHANNEL TO BE OVERLAPPED 1 1/2". START INSTL. AT ℄ SHIP & OVERLAP PROGRESSIVELY OUTBD. SECURE W/ALUM POP RIVETS. (TYP.)
(86) ISOLATION TAPE BETWEEN ALUM. & STL. (TYP.)
(117) FIELD FIT 3/16" ALUM. CLOSURE PLATE
(134) 2" PINS, SPACE STUDS 2'-0" MAX. (TYP.)
17 (TYP.) AFT SIDE
(22) SPOTWELD IN SHOP
1 1/2" PINS (139)
(117) FIELD FIT 3/16" ALUM. CLOSURE PLATE
(86) ISOLATION TAPE BETW. ALU. & STEEL (TYP.)
SPRAY FOAM INSULATION
(22)
6" × 15" DUCT
2"
1 1/2"
5 1/2"

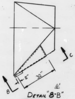
DETAIL "6-A"
SHOWING INSTALLATION OF INSULATION INSIDE OF
BHD. 109 SHOWN ℄ LKG. TO PORT, BHDS. M-11, M-27, M-43,
SCALE ~ 1 1/2" = 1'-0"


44'-0" ABL
2ND DK
9
8
5'-1"
5'-9"
4'-4 13/64"
24"
25"
SCREEN
21'-8" FLAT
4"

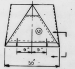
DETAIL "10-A"
SCALE 3/16" = 1'-0"
℄ LKG. STBD. (PORT SIMILAR)


TAP FB FOR 1/4-20 NC MACH SCREW (61)
1" × 1/4" FB
24"
8720-73 (73)
(57) (62) (70)
DRILL 5/16" DIA HOLES FOR 1/4" BOLT, NUT & LOCK WASHER (TEMPLATE FROM SENSOR)
11"
1" U FRAME (46)
RETURN AIR
(22) 10 GA × 4 WIDE FB RTD TO MTD ON FLAT BAR

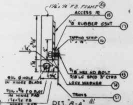
SECTION "9-B"
℄ LKG. STBD. (PORT SIMILAR)
SCALE: 1 1/2" = 1'-0"



DETAIL "8-B"
HINGED ACCESS PLT AT RECIRC. FANS
N.T.S.



DET. 8-C
N.T.S.


1 1/4" × 1/4" F.B. FRAME (50)
ACCESS PL (15)
1/8" RUBBER GSKT (17)
TAPPING STRIP 1" × 1/8" (16)
3/8" HEX HD BOLT 5/8 LG SPCD 3" CTRS (45)
LOCK WASHER (74)
TRANS (21)
9/16 Ø HOLE IN HINGE BLADE
9/16 × 3/4 F.O. SLOT IN HINGE PAD
(51) 1 1/4 × 1 1/4 FB HINGE PAD
1 1/4"
2 3/16"
2"
1 1/16"

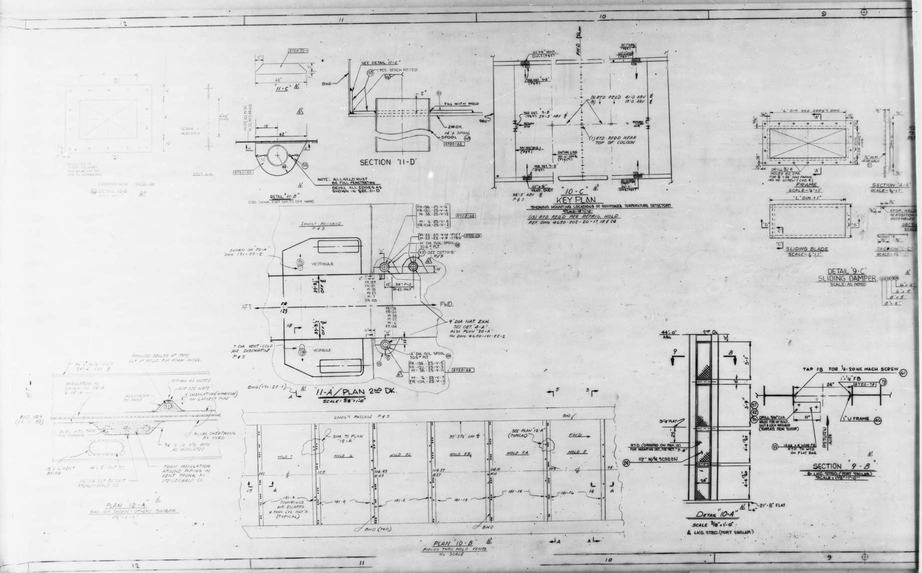
DET. "8-A"
NO SCALE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-191-26-1

NOV 1980 10X

FRAME 4 OF 5



12
11
10
9
"11-C"
NOTE: ALL WELD MUST BE FULL PENETRATION
BEVEL ALL EDGES AS SHOWN IN SEC. 11-D
DETAIL "11-B"
STBD SHOWN, PORT SIM. TO OPP HAND
SECTION "11-D"
FILL WITH WELD
2ND DK
14" ⌀ SPOOL
8720-68
8720-55
"10-C"
KEY PLAN
SHOWING MOUNTING LOCATIONS OF RESISTANCE TEMPERATURE DETECTORS
SCALE: 1/8"=1'-0"
(13) RTD REQ'D PER REFRIG. HOLD
REF. DWG 4650-202-20-17, 18 & 24
(1) RTD REQ'D NEAR TOP OF COCOON
DATUM LINE
FRAME
SCALE-1/4"=1'
SLIDING BLADE
SCALE-1/2"=1'
DETAIL "9-C"
SLIDING DAMPER
SCALE: AS NOTED
SECTION "A-A"
LONG'L PASSAGE P&S
VESTIBULE
AFT
FWD.
FR 125
9" DIA. NAT. EXH.
7" DIA. VENT-COLD AIR DISCHARGE
14" DIA ISOL SPOOL
"11-A" PLAN 2ND DK.
SCALE: 3/8"=1'-0"
DWG (191-25-1)
PLAN "12-A"
BHD 109 SHOWN - OTHERS SIMILAR
1 1/2"=1'-0"
PROVIDE SEALER AT PIPE
FOAM INSULATION AROUND PIPING IN VENT TRUNK BY STEIGERWALD CO.
ALUM. SHEATHING BY YARD
LONG'L PASSAGE P&S
HOLD 7
HOLD 6
HOLD 5C
HOLD 5B
HOLD 5A
HOLD 5
FWD
SOUNDINGS AIR ESCAPES & TANK LVL IND'S. (TYPICAL)
BHD (TYP.)
BHD
PLAN "10-B"
PIPING THRU HOLD VENTS
NO SCALE
DETAIL "10-A"
SCALE 3/8"=1'-0"
℄ LKG. STBD. (PORT SIMILAR)
44'-0" ABL
2ND DK
21'-8" FLAT
1/2" W/M SCREEN
R.T.D. (ORDERED ON REF. 12) FOR MOUNTING DET. SEE DET. "9-B"
TAP FB FOR 1/4-20NC MACH SCREW
1" U FRAME
RETURN AIR
SECTION "9-B"
℄ LKG. STBD. (PORT SIMILAR)
SCALE: 1 1/2"=1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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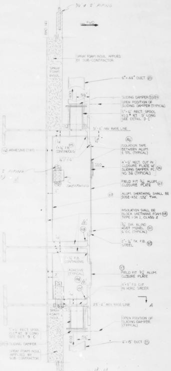
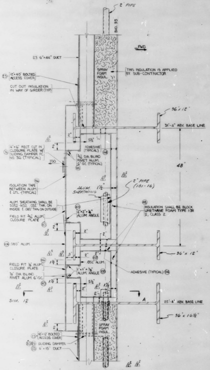
BUILDERS PLAN NO. M4650-191-26-1

FRAME 5 OF 5


3/4" & 2" PIPING
FWD
BHD 141
SPRAY FOAM INSUL. APPLIED BY SUB-CONTRACTOR
SPRAY FOAM INSUL.
6"×44" DUCT (23)
400
5½"
SLIDING DAMPER (20)(29)
OPEN POSITION OF SLIDING DAMPER (TYPICAL)
5"×6" RECT. SPOOL 10.2# RT. 9" LONG SEE DETAIL "9-C"
31'-4" ABV BASE LINE
(86)
(114) ADHESIVE (TYP)
1"×1/4" F.B. CONTINUOUS (115)
ISOLATION TAPE BETWEEN ALUM. & STL. (TYPICAL)
350
4"×6" RECT. CUT IN CLOSURE PLATE W/ SLIDING DAMPER PC. NO. 36 (TYPICAL) (36)
3/4" & 2" PIPING (181-3)
SHEATHING
FIELD FIT 3/16" ALUM. CLOSURE PLATE (117)
ALUM. SHEATHING SHALL BE 5052-H32 .032" THK.
INSULATION SHALL BE BLOCK URETHANE FOAM (118) TYPE 1 OR 2, CLASS 2
3/16" DIA. BLIND RIVET MONEL (111) 6" O.C. (TYPICAL)
2"×1/4" TK. F.B. STEEL (113)
ADHESIVE (TYPICAL) (114)
4"×5" F.O. CUT IN HORIZ. GIRDER
SIM. 12
A
25'-4" ABV BASE LINE
5"×6" RECT. SPOOL 10.2# RT. 9" LONG SEE DET. "9-C"
(20)(29) SLIDING DAMPER
SPRAY FOAM INSUL. APPLIED BY SUB-CONTRACTOR
6"×15" DUCT (23)

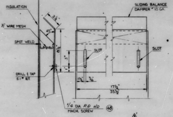
DETAIL "15-A"

SCALE 1½"=1'-0"


2" PIPE
BHD. 93
FWD
23 6"×44" DUCT
(23) 12"×40" BOLTED ACCESS COVER
CUT OUT INSULATION IN WAY OF GIRDER (TYP.)
SPRAY FOAM INSUL.
THIS INSULATION IS APPLIED BY SUB-CONTRACTOR
36"×12"
31'-4" ABV. BASE LINE
2"
5½"
(36) 4"×6" RECT. CUT IN CLOSURE PLATE W/ SLIDING DAMPER PC. NO. 36 (TYPICAL)
ADHESIVE (TYPICAL) (114)
3/16" DIA. BLIND RIVET ALUM. 6" O.C. (TYPICAL) (111)
350
48"
(86) ISOLATION TAPE BETWEEN ALUM. & STL. (TYPICAL)
ALUM. SHEATHING
1½"
2" PIPE (181-16)
ALUM. SHEATHING SHALL BE 5052-H32 .032" THK. ON INSIDE & .080" THK. ON OUTSIDE
(109) 2"×2"×1/4" ALUM. ANGLE
(118) INSULATION SHALL BE BLOCK URETHANE FOAM TYPE 1 OR 2, CLASS 2.
FIELD FIT 3/16" ALUM. CLOSURE PLATE (117)
(106) .080" ALUM.
36"×12"
3"
(107) .032" ALUM.
(116) FIELD FIT 1/8" ALUM. CLOSURE PLATE
1"×1"×1/8" ALUM. ANGLE (108)
1/8" DIA. BLIND RIVET ALUM. 6" O.C. (110)
ADHESIVE (TYPICAL) (114)
SIM. 12
A
25'-4" ABV. BASE LINE
36"×16½"
(23) 12"×12" BOLTED ACCESS COVER
(20)(29) SLIDING DAMPER
(23) 6"×15" DUCT
SPRAY FOAM INSUL.

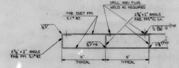
DETAIL "14-A"

SCALE 1½"=1'-0"


INSULATION
1/2" WIRE MESH
SPOT WELD
DRILL & TAP 5.1# RT.
2¼"
45°
8½"
3"
1"
SLOT
SLIDING BALANCE DAMPER #10 GA.
1½"
7/16"
17½"
35½"
1/4" DIA. RD. HD. MACH. SCREW (48)

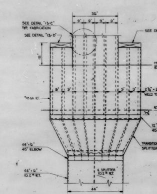
DETAIL "13-D"

SCALE: 1"=1'-0"


FAB. DUCT FM. 5.1# RT.
DRILL AND PLUG WELD AS REQUIRED
2¾"×2" ANGLE FAB. FM. #10 GA.
1/8" V
1/8" V 1-6
1/2 1/8 9 TYP.
V 1/8 TYP.
2¾"×2" ANGLE FAB. FM. 5.1# RT.
9" TYPICAL
9" TYPICAL

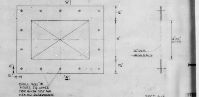
DETAIL "13-C"

SCALE: 1"=1'-0"


36"
9" 9" 9" 9"
SEE DETAIL "13-C" TYP. FABRICATION
SEE DETAIL "13-D"
SEE DETAIL "13-D"
18"
MN. DK. RT. 53'-0" ABV. BL
9" 9" 9" 9"
2¾"×2" ANGLE WELD TO BOX GIRDER
#10 GA. RT.
RT. @ 3'-0" BELOW MN. DK.
72"×2¾" 45° ELBOW
TRANSITION WITH SPLITTERS #10 GA.
44"×6" 45° ELBOW
44"×6" 10.2# RT.
℄ SPLITTER 10.2# RT.
44"

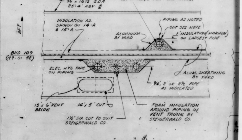
DETAIL "13-A"

DUCT FWD OF FR.109, M11, M27, M43, 125, 141 SHOWN
SCALE: 1/2"=1'-0"


6"
"A"
1½"
4"
1½"
1/2"
1/2"
DRILL 9/32" Φ HOLES EQ. SPAC'D FOR 1/4"×3/4" SELF TAP HEX HD. SCREW(S)(DB.)
1/2" W.M. 14 GA. GALV.
4"×6" OPNG
SECT. A-A

DAMPER - 6"×4" REQD 48

(140) DETAIL 12-B
SCALE 1/2"=1"


36"×16½" G.O.R. 25'-4" ABV. ℄
PROVIDE SEALER AT PIPE CUT IF REQ'D FOR FOAM INSUL.
AFT
INSULATION AS SHOWN ON 14-A & 15-A
PIPING AS NOTED
CUT SEE NOTE
ALUMINUM BY YARD
1" INSULATION (MINIMUM) ON LARGEST PIPE
BHD 109 (129-01-52)
ELEC. HTG TAPE ON PIPING
ALUM. SHEATHING BY YARD
3/4", 2" OR 2½" PIPE AS INDICATED
15"×6" VENT BELOW
14"×5" CUT
1½" DIA. CUT TO SUIT STEIGERWALD CO.
FOAM INSULATION AROUND PIPING IN VENT TRUNK BY STEIGERWALD CO.

PLAN "12-A"

BHD 109 SHOWN - OTHERS SIMILAR
1½"=1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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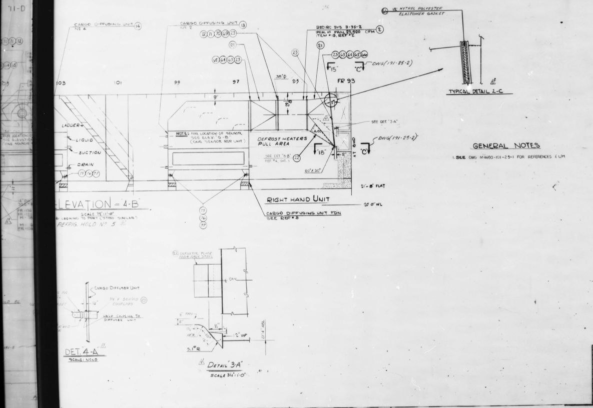
BUILDERS PLAN NO. M4650-191-26-2

FRAME 1 OF 5


CARGO DIFFUSING UNIT (14) Nº 4
CARGO DIFFUSING UNIT (13) Nº 2
(12) HYTREL POLYESTER ELASTOMER GASKET
RECIRC SYS 3-95-2
SPECIAL AF FAN, 25,520 CFM (2)
ITEM #18, REF #2
(23)(63)(64)(65)(66)
"15" "C" DWG (191-25-2)
FR 93
38"Ø
TYPICAL DETAIL 2-C
LADDER
LIQUID
SUCTION
DRAIN
NOTES FOR LOCATION OF SENSOR SEE ELEV. "G-B" (ONE SENSOR PER UNIT)
DEFROST HEATERS PULL AREA
SEE DET. "8-B" REF #4, SHT. 1
"18" "C" DWG (191-25-2)
SEE DET "3-A"
60"X 30"
AT BHD
21'-8" FLAT
20'-0" WL
RIGHT HAND UNIT
CARGO DIFFUSING UNIT FDN SEE REF #3
ELEVATION - 4-B
SCALE 1/2" - 1'-0"
LOOKING TO PORT (STBD SIMILAR)
REFRIG. HOLD Nº 5
103
101
99
97
95
9'
(22) DEFLECTOR PLATE 10GA. GALV. STEEL
FAN
CARGO DIFFUSER UNIT
3/4" Ø SCHED 40 COUPLING
WELD COUPLING TO DIFFUSER UNIT
DET. 4-A
SCALE: NONE
DETAIL 3-A
SCALE 3/4"-1'-0"
11"
12" WF
5-1"
3
2

GENERAL NOTES

1. SEE DWG M4650-191-25-1 FOR REFERENCES & UM

NO.	PLAN NO.	TITLE
		SEE GENERAL NOTE NO. 1

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	9/15/77	ALL	1-CAPTIONS CLARIFIED PER G.G. SHARP LTR AUG. 9, 1977 #5587-538	W.S.	G.G. SHARP LTR. DATED 11-23-77
2	1/12/78	ALL	1-7"x7" P.T. INDICATED IN ALL ELEV'S NEAR AFT BHDS.	W.S.	2-26-78
3	8/21/78	4 & 6	1-DIFFERENTIAL SENSOR ARR'GT REVISED ON ELE. "6-B" TO SUIT ROSEMOUNT SENSOR UNIT. DET. "4-A" & "6-A" REVISED TO SUIT.	W.S.	8/24/78
		2	2-VENDORS NAME CH'G'D ON DET. "2-C"		
4	7/16/79	3, 4, 6, 9, 12	1-ADDED DEFLECTOR PLATE TO DETAIL "3-A" PER SHOP SK AND ALT. ELEV'S 4-B, 6-B, 9-B, 12-A, 12-B AND 12-C.	R.L.	7/26/79

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINER SHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/8" = 1'-0"
DATE 7-12-77
DRAWN B.B.
APPROVED
TRACED
APPROVED
CHECKED B.E.M.
APPROVED

PLAN NO. M-4650-191-26-2
ALT. NO. 4

HVAC A/D REFRIG.
CARGO SECT & ELEV.

APPROVAL LETTERS

HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8-9-77				
A.B.S.					
U.S.C.G.	8-9-77				
LLOYD'S R.S.					
U.S.P.H.S.					

2 OF 2 DRAWINGS (FAN RMS)

M-685

25.3 SQ. FT.

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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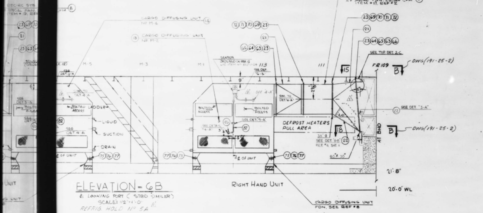
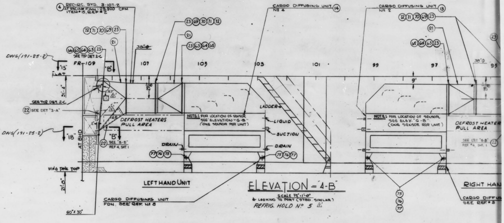
BUILDERS PLAN NO. M4650-191-26-2

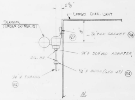
FRAME 2 OF 5


RECIRC SYS 3-M2-2
A/F SPECIAL FAN 23,520 CFM
ITEM #17, REF #2
CARGO DIFFUSING UNIT
Nº M-4
CARGO DIFFUSING UNIT
Nº M-2
M-5
M-3
M-1
LADDER
LIQUID
SUCTION
DRAIN
BOLTED ACCESS
DEFROST HEATERS
PULL AREA
SEE DET. 3-A
SEE DET. 8-B
REF #4 SHT. 1
FR 109
B
DWG (191-25-2)
SEE TYP DET 2-C
111
113
15
18
AT BHD
60° X 30°
21'-8"
20'-0" WL
RIGHT HAND UNIT
CARGO DIFFUSING UNIT
FDN. SEE REF #8

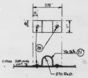
ELEVATION = 6B
℄ LOOKING PORT (STBD SIMILAR)
SCALE: 1/2"=1'-0"
REFRIG. HOLD Nº 5A


RECIRC SYS 3-107-2
A/F SPECIAL FAN 23,520 CFM
ITEM #15, REF #2
CARGO DIFFUSING UNIT
Nº 4
CARGO DIFFUSING UNIT
Nº 2
DWG (191-25-2)
SEE TYP DET 2-C
FR-109
15
FLAT
18
B
38" Φ
107
105
103
101
99
97
95
SEE DET 3-A
DEFROST HEATERS
PULL AREA
NOTE: FOR LOCATION OF SENSOR SEE ELEVATION "G-B" (ONE SENSOR PER UNIT)
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "G-B" (ONE SENSOR PER UNIT)
LADDER
LIQUID
SUCTION
DRAIN
SEE "8-B"
REF 4, SHT. 1
AT BHD
WING TANK TOP
21'-0"
60° X 30°
LEFT HAND UNIT
RIGHT HAND
CARGO DIFFUSING UNIT
FDN. SEE REF. Nº 8
SEE REF #8

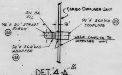
ELEVATION = "4-B"
SCALE 3/8"=1'-0"
℄ LOOKING TO PORT (STBD SIMILAR)
REFRIG. HOLD Nº 5


CARGO DIFF. UNIT
SENSOR
(ORDER ON REF 12)
GASKET
1/4" Φ SCR'WD ADAPTER
SIL BR.
1/4" Φ UNION
1/4" Φ TUBING

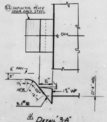
DET "G-A"
MOUNTING DET. FOR SENSOR
SCALE: 1 1/2"=1'-0"


2 1/2"
CARGO DIFFUSING UNIT
270 RAD.

DETAIL "5-A"
BRACKET FOR 1/4" I.P.S. TUBING
SCALE: NONE


CARGO DIFFUSER UNIT
SIL BR. ELL
1/4" Φ 90° STREET ELBOW
1/4" Φ SCR'WD COUPLING
WELD COUPLING TO DIFFUSER UNIT
1/4" Φ SCR'WD ADAPTER

DET. "4-A"
SCALE: NONE


DEFLECTOR PLATE
10GA GALV. STEEL
FAN
6" FAN
11"
12" WF
27'-4" ABL

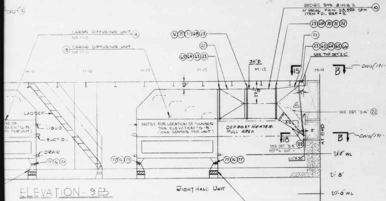
DETAIL "3-A"
SCALE 3/4"=1'-0"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-191-26-2

NOV 1980 10X

FRAME 3 OF 5

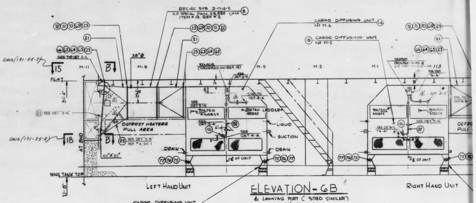

RECIRC SYS. 8-M-18-2
AF SPECIAL FAN. 28,520 CFM
ITEM # 21. REF # 2
(10)
CARGO DIFFUSING UNIT (14)
Nº M-8
(13) CARGO DIFFUSING UNIT
Nº M-6
(72)(71)(70)(69)(23)
(23)(69)(70)(71)(72)
(21)
(65)(64)(63)(23)
(23)(63)(64)(65)(66)
SEE TYP DET "2-C"
38"Φ
M-21
M-19
M-17
M-15
M-13
M-11
15
B
DWG(191-25-2)
9"
29"
5"
SEE DET. "3-A" (22)
LADDER
LIQUID
SUCTION
DRAIN
NOTE: FOR LOCATION OF SENSOR SEE ELEVATION "G-B" (ONE SENSOR PER UNIT)
DEFROST HEATER PULL AREA
18
SEE DET. "8-B" (22)
REF # 4, SHT. 1
2"
AT BHD
24'0" WL
60"X30"
(75)(76)(77)
(77)(76)(75)
21'-8"
20'-0" WL
RIGHT HAND UNIT
CARGO DIFFUSING UNIT
FDN - SEE REF # 8

ELEVATION - 9B

℄ LOOKING TO PORT (STBD SIMILAR)

SCALE: 1/2"=1'-0"

REFRIG. HOLD Nº 5-B

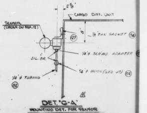

RECIRC SYS. 3-M14-2
A.F. SPECIAL FAN. 28,520 CFM
ITEM # 19, REF # 2
(8)
(72)(71)(70)(69)(23)
(21)
(66)(65)(64)(63)(23)
SEE TYP DET 2-C
(23)(69)(70)(71)(72)
(21)
(23)(63)(64)(65)
38"Φ
DWG(191-25-2)
15
B
M-11
M-9
FLAT
31'-4"
SENSOR (ORDERED ON REF. 12)
SEE DET. "G-A"
SIM. TO DET. 4-A
SEE DET. 5-A
BOLTED ACCESS
BOLTED ACCESS
LADDER
M-5
M-3
M-1
CARGO DIFFUSING UNIT (14)
Nº M-4
(13) CARGO DIFFUSING UNIT
Nº M-2
(22) SEE DET. "3-A"
DEFROST HEATERS PULL AREA
SEE DET. "5-A"
(82)
(126)
6"
SEE DET. 4-A
LIQUID
SUCTION
DRAIN
DRAIN
DWG(191-25-2)
18
B
(22) SEE DET "8-B"
REF. # 4, SHT. 1
AT BHD
60"X30"
℄ OF UNIT
(77)(76)(75)
(75)(76)(77)
WING TANK TOP
21'-8"
LEFT HAND UNIT
CARGO DIFFUSING UNIT
FDN - SEE REF # 8
SENSOR ORDERED ON REF. 12
113
SEE DET. "G-A"
9"
SEE "4-A"
SIM. TO DET. "4-A"
BOLTED ACCESS
BOLTED ACCESS
SEE DETAIL "4-A"
SEE DET. "5-A"
(126)
(82)
3"
℄ OF UNIT
(77)(76)(75)
(75)(76)
DEFRO
PULL
RIGHT HAND UNIT

ELEVATION - 6B

℄ LOOKING PORT (STBD SIMILAR)

SCALE: 1/2"=1'-0"

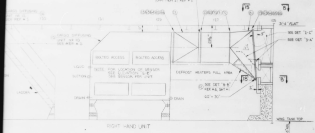
REFRIG. HOLD Nº 5A


2⅝"
CARGO DIFF. UNIT
SENSOR (ORDER ON REF. 12)
(127)
8"
1/8" THK GASKET (56)
1/4"Φ SCR'WD ADAPTER
SIL. BR.
1/4"Φ UNION (GR'D JT) (124)
1/4"Φ TUBING
(82)

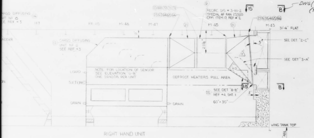
DET. "G-A"

MOUNTING DET. FOR SENSOR

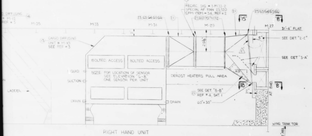
SCALE: 1 1/2"=1'-0"


12
RECIRC SYS # 3-M27-2
SPECIAL AF FAN 23,520
CFM ITEM 21 REF # 2
15
B
31'-4" FLAT
SEE DET "2-C"
SEE DET "3-A"
CARGO DIFFUSING UNIT Nº 10 SEE REF # 3
BOLTED ACCESS
BOLTED ACCESS
LIQUID
SUCTION
SIZE FOR LOCATION OF SENSOR SEE ELEVATION "G-B" ONE SENSOR PER UNIT
DEFROST HEATERS PULL AREA
SEE DET "8-B" REF # 4, SHT #1
60" × 30"
LADDER
DRAIN
WING TANK TOP
21'-8" ABL
RIGHT HAND UNIT

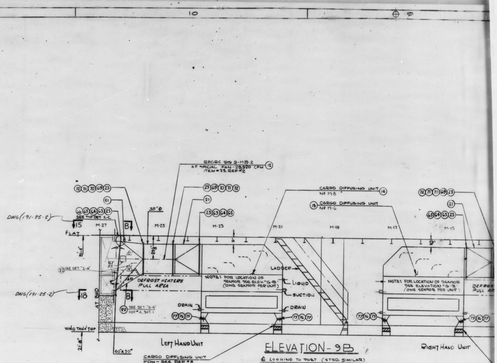
ELEVATION "12-D"
℄ LOOKING TO PORT
(STBD SIM)
SCALE ½"=1'-0"
REFRIG. HOLD Nº 7


DWG (191-25-2) (TYPICAL)
CARGO DIFFUSING UNIT Nº 8 SEE REF # 3
117
FR 115
M-48
M-47
M-45
M-43
RECIRC SYS # 3-M1-2
SPECIAL AF FAN 23,520
CFM ITEM 13 REF # 2
15
B
31'-4" FLAT
SEE DET "2-C"
SEE DET "3-A"
CARGO DIFFUSING UNIT Nº 6 SEE REF # 3
LADDER
LIQUID
SUCTION
SIZE FOR LOCATION OF SENSOR SEE ELEVATION "G-B" ONE SENSOR PER UNIT
DEFROST HEATERS PULL AREA
SEE DET "8-B" REF # 4, SHT 1
60" × 30"
DRAIN
WING TANK TOP
21'-8" ABL
RIGHT HAND UNIT

ELEVATION "12-B"
℄ LOOKING TO PORT
(STBD SIM)
SCALE ½"=1'-0"
REFRIG. HOLD Nº 6


CARGO DIFFUSING UNIT # M-12 SEE REF # 3
M-35
M-33
M-31
M-29
M-27
RECIRC SYS # 3-M33-2
SPECIAL AF FAN 23,520
CFM ITEM 34, REF # 2
15
B
31'-4" FLAT
SEE DET "2-C"
SEE DET "3-A"
CARGO DIFFUSING UNIT # M-10 SEE REF # 3
BOLTED ACCESS
BOLTED ACCESS
LIQUID
SUCTION
SIZE FOR LOCATION OF SENSOR SEE ELEVATION "G-B" ONE SENSOR PER UNIT
DEFROST HEATERS PULL AREA
SEE DET "8-B" REF # 4, SHT 1
60" × 30"
LADDER
DRAIN
AT BHD
18
WING TANK TOP
21'-8" ABL
RIGHT HAND UNIT
12

ELEVATION "12-A"
℄ LOOKING TO PORT
(STBD SIM)
SCALE ½"=1'-0"
REFRIG. HOLD Nº 5-C


11
10
9
RECIRC SYS 3-M-29-2
AF SPECIAL FAN-23,520 CFM
ITEM # 25, REF # 2
⑫
㉓㉓⑦⑥⑥⑤
㉑
⑥⑥⑥④⑥③㉓
SEE TYP. DET 2-C
DWG (191-25-2)
15
M-27
B
FLAT
38" Φ
M-25
M-23
㉓⑥⑨⑦⓪⑦①⑦②
㉑
㉓⑥③⑥④⑥⑤
CARGO DIFFUSING UNIT Nº M-8 ⑭
⑬ CARGO DIFFUSING UNIT Nº M-6
M-21
M-19
M-17
M-15
9"
31'-4"
29⅛"
㉒ SEE DET. "3-A"
DEFROST HEATERS PULL AREA
NOTE: FOR LOCATION OF SENSOR SEE ELEV. "G-B" (ONE SENSOR PER UNIT)
LADDER
LIQUID
SUCTION
DRAIN
DRAIN
DWG (191-25-2)
18
AT BHD
B
㉒ SEE DET. "8-B" REF # 4, SHT. 1
⑦⑦⑦⑥⑦⑤
⑦⑤⑦⑥⑦⑦
NOTE: FOR LOCATION OF SENSOR SEE ELEVATION "G-B" (ONE SENSOR PER UNIT)
DEFROST PULL AREA
WING TANK TOP
21'-8"
60" × 30"
LEFT HAND UNIT
RIGHT HAND UNIT
CARGO DIFFUSING UNIT FDN - SEE REF # 8

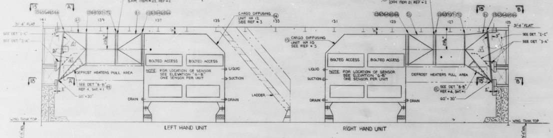
ELEVATION - 9B
℄ LOOKING TO PORT (STBD. SIMILAR)
SCALE: 1/2"=1'-0"
REFRIG. HOLD Nº 5-B

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

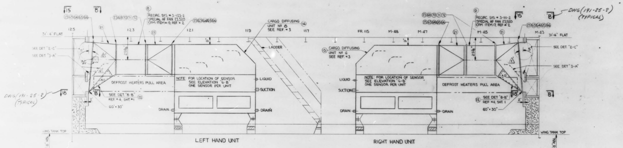
BUILDERS PLAN NO. M4650-191-26-2

FRAME 4 OF 5


RECIRC. SYS. # 3-139-2
SPECIAL AF FAN 23,520
CFM ITEM # 23, REF # 2
12
15
A
23 63 64 65 66
23 68 70 71 72
21
141
139
137
135
133
131
129
127
125
CARGO DIFFUSING
UNIT Nº 12
SEE REF # 3
14
CARGO DIFFUSING
UNIT Nº 10
SEE REF # 3
13
RECIRC. SYS # 3-127-2
SPECIAL AF FAN 23,520
CFM ITEM 21, REF # 2
10
31'-4" FLAT
SEE DET "2-C"
SEE DET "3-A"
29⅝"
5"
BOLTED ACCESS
BOLTED ACCESS
NOTE: FOR LOCATION OF SENSOR
SEE ELEVATION "6-B"
ONE SENSOR PER UNIT
DEFROST HEATERS PULL AREA
LIQUID
SUCTION
DRAIN
LADDER
18
B
SEE DET "8-B"
REF 4, SHT. # 1
22
2"
60" × 30"
WING TANK TOP
21'-8" ABL
LEFT HAND UNIT
RIGHT HAND UNIT

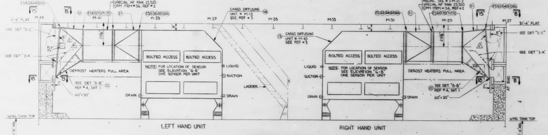
ELEVATION "12-D"
℄ LOOKING TO PORT
(STBD. SIM)
SCALE: ½"=1'-0" 1

REFRIG. HOLD N.º 7


15
B
23 63 64 65 66
23 68 70 71 72
RECIRC. SYS. # 3-123-2
SPECIAL AF FAN 23,520
CFM ITEM # 19, REF # 2
8
21
125
123
121
119
117
FR 115
M-48
M-47
M-45
M-43
CARGO DIFFUSING
UNIT Nº 8
SEE REF. # 3
14
CARGO DIFFUSING
UNIT Nº 6
SEE REF. # 3
13
RECIRC. SYS. # 3-111-2
SPECIAL AF FAN 23,520
CFM ITEM 17, REF # 2
6
DWG (191-25-2)
(TYPICAL)
31'-4" FLAT
SEE DET "2-C"
SEE DET "3-A"
29⅝"
LADDER
NOTE: FOR LOCATION OF SENSOR
SEE ELEVATION "6-B"
ONE SENSOR PER UNIT
DEFROST HEATERS PULL AREA
LIQUID
SUCTION
DRAIN
18
SEE DET "8-B"
REF # 4, SHT. # 1
22
60" × 30"
WING TANK TOP
21'-8" ABL
LEFT HAND UNIT
RIGHT HAND UNIT

ELEVATION "12-B"
℄ LOOKING TO PORT
(STBD. SIM)
SCALE: ½"=1'-0" 1

REFRIG. HOLD N.º 6


23 63 64 65 66
15
B
21
23 68 70 71 72
RECIRC. SYS. # 3-M-44-2
SPECIAL AF FAN 23,520
CFM ITEM # 36, REF # 2
36
M-43
M-41
M-39
M-37
M-35
M-33
M-31
M-29
M-27
CARGO DIFFUSING
UNIT # M-12
SEE REF # 3
14
CARGO DIFFUSING
UNIT # M-10
SEE REF # 3
13
RECIRC. SYS. # 3-M-33-2
SPECIAL AF FAN 23,520
CFM ITEM # 34, REF # 2
34
31'-4" FLAT
SEE DET "2-C"
SEE DET "3-A"
29⅝"
5"
BOLTED ACCESS
BOLTED ACCESS
NOTE: FOR LOCATION OF SENSOR
SEE ELEVATION "6-B"
ONE SENSOR PER UNIT
DEFROST HEATERS PULL AREA
DEROST HEATERS PULL AREA
LIQUID
SUCTION
DRAIN
LADDER
18
SEE DET "8-B"
REF # 4, SHT. 1
22
60" × 30"
AT BHD.
WING TANK TOP
21'-8" ABL
LEFT HAND UNIT
RIGHT HAND UNIT

ELEVATION "12-A"
℄ LOOKING TO PORT
(STBD. SIM)
SCALE: ½"=1'-0" 1

REFRIG. HOLD N.º 5-C

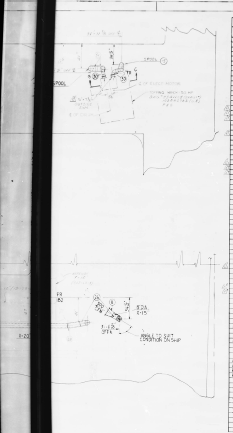
AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-26-2

FRAME 5 OF 5

3 2



LIST OF MATERIALS

ITEM	NAME	QTY.	MATL.	SPECS.	DESCRIPTION	REMARKS	WT	SOURCE	REQ'N. NO.
1	FAN CENTRIFUGAL ~ 51-25-2	1	VARIOUS		SIZE: 30CF	REF.# 5, ITEM# 96			500027
2	↓ ↓ ~ 52-182-2	1	↓		↓ ↓	↓ ↓ ↓ 97			↓
3									
4									
5									
6									
7									
8									
9									
10									
11	TERMINAL, TYPE 'J' ~ SPECIAL	3	VARIOUS		SIZE: 8" DIA. × 10¾" DIA. ~ L=10 3/16	REF. 1, SH. #18 3/16" THK.		JUNIPER JE-108M	504858-F
12	↓ ↓	3	↓		↓	↓			↓
13									
14	↓ W.M. GRILLE	2	↓		↓ 21" DIA.	REF. 1, SHT. #16			↓
15	SPOOL	8	STEEL	ABS-GR.A	8" DIA. ~ L=6'	MAKE FROM PC.# 52			*
16	↓	1	↓	↓	8" DIA. ~ L=24'	↓			*
17	↓	1	↓	↓	8" DIA. ~ L=26'	↓			*
18	BALANCE DAMPER TYPE E	6	VARIOUS		SIZE: 8" DIA.	REF. 1, SHT. # 28			504859-J
19									
20	SPOOL	5	STEEL	ABS-GR.A	8" DIA. ~ L=5 7/16'	MAKE FROM PC# 52			*
21									
22									
23									
24									
25	PIPE ~ STL. WELDED	105 L.FT.	STEEL	A53 GR.B ERW	8" I.P.S. SCH.20 (1/4" WALL THKNESS)	SEE NOTES 128, 135 EF-529		ANSI B36.10	PIPE SHT. 1636
26	ELBOW, STD. PIPE ~ 90°	18		A234 GR.WPB	8" DIA. (SCH.20, SEAMLESS)	ANSI B16.9		TUBE TURN PT.# 201	504802-A 504802-E
27	↓ ~ 30°	9		A53 GR.B ERW	(MAKE FROM PC. NO.	26			
28	↓ ~ 10°	1	↓	↓	↓	↓			
29	STEEL, SHEET	30#	STEEL	ABS-GR.A	20.4# PLATE	FOR SPOOLS			*
30	STEEL, SHEET	120#	STEEL	↓	10.2# PLATE	FOR DUCTS, FLANGES			*
31	SHEET METAL	35#	STL. GALV.	A525	10 U.S.S.G.	FOR BELLMOUTH, FLANGES & HANGERS			*
32	STEEL, SHEET	46#	STEEL	ABS-GR.A	7.65# PLATE	FOR TERM. BODY FOR SPECIAL TERM. & DUCTS			*
33	SHEET METAL	20#	STL. GALV.	A525	#20 U.S.S.G.	FOR DUCTS			*
34	SHEET METAL	20#	↓	↓	#22 U.S.S.G.	FOR DUCTS			*
35	FLAT BAR	30 L.FT.	STEEL	ABS-GR.A	SIZE: 1½" X 3/16"	REF. 1, SH. #11A & 12			*
36	FLAT BAR CLIPS	18	STL. GALV.	COMM'L.	NELSON STUD PART NO. A101-501-786	↓			504829-H
37	HEX HD. BOLTS HVY. ANSI B18.2.1	16		A307 GR.B	SIZE: 3/8-16NC-2A ~ 1½" L'G.				504830-W
38	↓	328			~ - 1¼" L'G.	& 10			
39	↓ NUTS B18.2.2	348			~ - B	↓			
40	WASHERS, FLAT HD.	112		COMM'L.	3/8" I.D. (NOMINAL)	10			↓
41	GASKET	55#	IMPREG. FELT		1/8" THK.	↓			504824-R
42	POP RIVETS	550	STL.	COMM'L.	SIZE: 1/8" X .063-.125	13			504830-X
43	SLEEVE PIPE/HEAT SHRINKABLE	15	POLYOLEFIN		SIZE: 8" DIA.	13			504830-C
44	FLAT BAR CLIPS	8	STL. GALV.		NELSON STUD PART NO. 101-084-029	11A			504829-H
45	SPIRAL CONDUIT PIPE	19 L.FT.	STL. GALV.	A526	SIZE: 8" DIA.	#22 U.S.S. GA.		UNITED SHEET METAL CO.	504844-H
46	ELBOW 90°	4				TYPE: E-90-1			
47	↓	3				: EV-90-2			504844-AH
48	↓ 30°	1	↓	↓	↓	: E-30-2		↓	↓
49									
50									
51	8" I.P.S. 90° ELL SHORT RAD.	2	STEEL	A234-GR.WPB	SCH. 80, SEAMLESS	ANSI - B16.28		TUBE TURN PT.# 203	504802-D
52	8" I.P.S. X-HVY PIPE	13 L.F.	↓	A53 TYPE S GR.B	SCH. 80	↓ - B36.10			PS-1656
53									
54									
55									
56									
57									
58									
59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

GENERAL NOTES

1. QUANTITY OF MATERIAL SHOWN IN L/M IS NET, NO ALLOWANCE IS MADE FOR SCRAP.
2. HANGERS FOR DUCTWORK ARE INDICATED THUS ⊏⊐
3. "X" DIMENSIONS CALLED FOR ON DUCTWORK ARE TAKEN FROM UNDERSIDE OF DK. OVER TO CENTER OF DUCT. "Y" DIMENSION CALLED FOR ON DUCTWORK ARE TAKEN FROM UPPERSIDE OF DK. UNDER TO CENTER OF DUCT.
4. ALL FLANGES ON DUCTWORK AFT. TO BE MADE FROM 10.2 # PLATE, FOR FURTHER INFORMATION SEE REF. 1, SH. #10
5. FOR INSTRUCTIONS & DETAILS NOT SHOWN ON THIS DRAWING SEE REFERENCE 1.
6. LOCATE SPOOLS 2 7/16 BELOW DECK; WHERE NOTED.
7. CHECK WINCH MOTOR-CONNECTIONS BEFORE FABRICATION OF DUCTWORK.

UAO-50135-H

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	7/13/78	9	1-MOTOR CONN. ABV. DK CHG'D FROM 44½" TO 48¾ ON DET. "9-C".	W.S.	7/21/78 AJG
		9	2-"9-A" INDICATED TOPPING WINCH MAIN DK (P) FR. 183-184. DET. "9-A" CORRECTED TO SHOW VENT CONN. HGHT ABV MAIN DK FOR CARGO & TOPPING WINCHES.		
		4/5	3-SEC'S "4-A" & "5-A" DELETED AS WIREWAYS HAVE BEEN CH'G'D.		
		3	4-GEN. NOTE #7 ADDED.		
		3	5-ITS # 51 & 52 ADDED TO L/M.		
		4	6-INBD SPOOL OF TOPPING WINCH M'V'D INBD TO 27'-9" OFF ℄ TO CLEAR G'D'R. MAIN DK (S) FR. 183.		
2	7/23/79	ALL	1-ALT PC# TO SPOOLS, TO AGREE WITH L/M.	RL	7/24/79
		7 9	2-RELOCATED SPOOL THRU FOCSLE DK AT FR #22, TO 8" FWD OF FR# 22 TO CLEAR SHIP STRUCT.		
		5	3-ROTATED TERM. INB'D TO CLEAR F.M. 2ND DK, PORT SIDE, FR# 183.		
		5	4-ALT. DUCTS TO CLEAR SHIPS STRUCT. 2ND DK, PORT SIDE, FRS-183 + 185		
		8	5-RAISED DUCT FROM 15" TO X-8", MN DK PORT SIDE, FR# 24-TO CLEAR ELECT. EQUIP.		
		2	6-IN L/M, ALT. REMARKS FOR PC# 15, 16, 17, 20, 27 + 28.		
		3	7-IN L/M-INCREASED QTY OF PC# 26-TRIM 12 TO 18 AND PC #47 FRM 2 TO 3.		
		2,5,6 7-8	8-ADDED NOTE FOR DUCT SIZES AT TOPPING WINCH CONNECTIONS TO SUIT VENDOR DWGS.		
	6-22-79	8-9	9-ALT. DUCTS TO SUIT TOPPING WINCH FOCSLE DK (P) FR 21-23	J.D.	AJG

REFERENCE PLANS

NO.	PLAN NO.	TITLE
19	H-4650-129-14-6	FDN. 30CF FAN WINCH MOTOR COOLING SUPPLY AFT
18	H-4650-129-18-21	FDN. 30CF FAN WINCH MOTOR COOLING SUPPLY FWD
17	H4650-232-80-42, 43	LASHING EYES, BATTENS & WALKWAY
16	-129-01-01, 48	TRANSV. SECT. BHDS. FRS. STANC. FR 17-38
15	-129-02-24, 25	MAIN DK PLTG. & GIRDERS FR 153½ AFT.
14	-129-02-29	FOCSLE DK. PLTG. & GIRDERS
13	-212-00-01	RIGGING ARRG'T. & DETAILS - FWD.
12	-212-00-04	RIGGING ARRG'T, 70 TON BOOM
11	-111-10-21, 22	GEN. ARRG'T. 2ND DK. FR. 153½ AFT.
10	-111-10-28, 29	GEN. ARRG'T. MAIN DK. FR. 153½ AFT.
9	-111-10-23, 24	GEN. ARRG'T. MAIN DK. FR. 77 FWD
8	-111-10-30	GENERAL ARRG'T. FOCSLE DECK
7	M4650-191-23-1, 2	HVAC A/D 2ND DK. AFT FR. 157
6	-191-20-1, 2	HVAC A/D MAIN DK. & ABV. FWD. FR. 45
5	-191-5	HVAC FAN LIST
4	-111-21-04	HVAC DIAG. 2ND DK. & BELOW FWD. FR. 157
3	-111-21-02	HVAC DIAG. MAIN DK. AFT. FR. 215 & 2ND DK. & BELOW
2	-111-21-01	HVAC DIAG. MAIN DK. & ABOVE
1	EF-531	STD. PLAN A.C. & VENT CONST. DET. & L/M MACHY. LIST.

HULL	DESIGN	CHARGE
4651	↓	↓
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 191

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED
DATE 6-22-77
DRAWN B. BAKER
APPROVED
TRACED
APPROVED
CHECKED R.A.M.
APPROVED HBL

PLAN NO. M4650-191-27
ALT. NO. 2

HVAC ARRG'T.
WINCH MOTOR
COOLING

APPROVAL LETTERS

HULLS	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-28-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

4650-51
4650-51
4650-51 RP
4650-51 RP

	DATE OF ISSUE
ALTERATION	0 0 1 2
ENGINEERING DISTRIBUTION	[illegible]
MAIL: OWNERS	[illegible]
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	[illegible]
JOINER CONT'R.	
INSPECTION: OWNER'S INSP.	[illegible]
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	[illegible]
U.S. NAVY INSP.	
U.S.C.G. INSP.	
OFFICE: HULL DRAFT. - 21	[illegible]
MACH. DRAFT. - 22	[illegible]
ELEC. DRFT. - 23	[illegible]
OUTFIT. DRAFT. - 25	
ESTIMATING	
MISC.: PRODUCTION (SCO)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
YARD: PIECE RATE - 11*	[illegible]
TEST DEPARTMENT	
STRUCTURAL: GROUND ASSEMBLY	[illegible]
H. LEVY	[illegible]
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	[illegible]
OPTICAL DETAIL - 46	[illegible]
WET DOCK	
MACH'Y & OUTFIT.: PIPE SHOP - 52	
OUTFIT. #1 PIER	[illegible]
PIPE DRAFT. - 53	[illegible]
BOILER SHOP - 58	
OUTSIDE MACH. - 60	[illegible]
C-MAT'L.	[illegible]
ELECTRIC SHOP - 70	[illegible]
SHEET MET. SHOP - 74	[illegible]
COPPER SHOP - 51	
PAINT SHOP - 76	[illegible]
WELDING	
OTHER: MOLD LOFT - 41	[illegible]
BRACKET SHOP	
TOTAL YARD DIST.	[illegible]

50-51-ALT. 0
50-51-ALT. 1
ALT. 2

M-686

90 FT

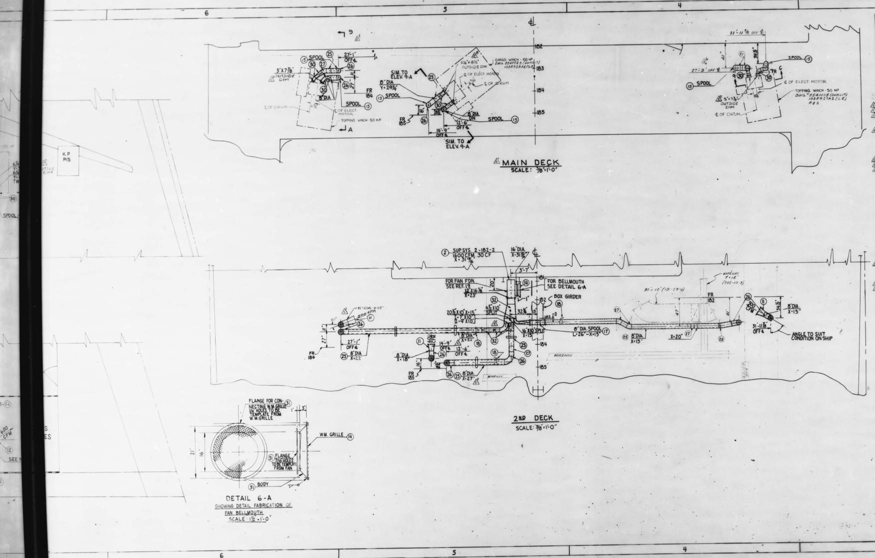
3 2 1

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-27

FRAME 2 OF 3


6
5
4
3
182
183
184
185
SPOOL
27'-1" OFF ℄
5"X7 7/8" OUTSIDE DIM
8"DIA
FR 184
℄ OF DRUM
℄ OF ELECT MOTOR
TOPPING WINCH - 50 H.P.
SIM. TO ELEV. 9-A
8"DIA Y=29 1/4"
CARGO WINCH - 100 HP
6 1/4" x 8 1/2" OUTSIDE DIM
℄ OF ELECT. MOTOR
℄ OF DRUM
16"
FR 185
14'-9" OFF ℄
12'-6" OFF ℄
8"DIA DN
31'-11 7/8" OFF ℄
27'-9" OFF ℄
5"x7 7/8" OUTSIDE DIM
℄ OF DRUM
℄ OF ELECT. MOTOR
TOPPING WINCH - 50 HP
SUP SYS. 2-182-2 1600 CFM 30 CF X=31 3/16
16"DIA X=31 3/16
3'-7"
FOR FAN FDN. SEE REF. 19
12"X16 1/16" X=23
FOR BELLMOUTH SEE DETAIL 6-A
BOX GIRDER
20 1/2"X10"X=15" 1"-7"X10" 1"-9"X10"
4 1/2"X10" SPLIT
16"X10"SPLIT X=15"
8" DIA. SPOOL L=26"-X=15"
5"-DIA-X=15" 500 CFM
FR 184
27'-1" OFF ℄
8"DIA X=22
8"DIA X=18"
FR 185
14'-9" OFF ℄
12'-6" OFF ℄
8"DIA X=27"
WATERWAY
FR 182
8"DIA X=15"
X=20"
8"DIA X=15"
31'-11 7/8" OFF ℄
ANGLE TO SUIT CONDITION ON SHIP
FLANGE FOR CONNECTING W.M. GRILLE 1/4" HOLES TO BE TEMPLATE FROM W.M. GRILLE
W.M. GRILLE
FLANGE 7/16 HOLES TO BE TEMPLATE FROM FAN
BODY
21"
16"
K P P/S

MAIN DECK
SCALE: 3/8"=1'-0"

2ND DECK
SCALE: 3/8"=1'-0"

DETAIL 6-A
SHOWING DETAIL FABRICATION OF FAN BELLMOUTH
SCALE: 1 1/2"=1'-0"

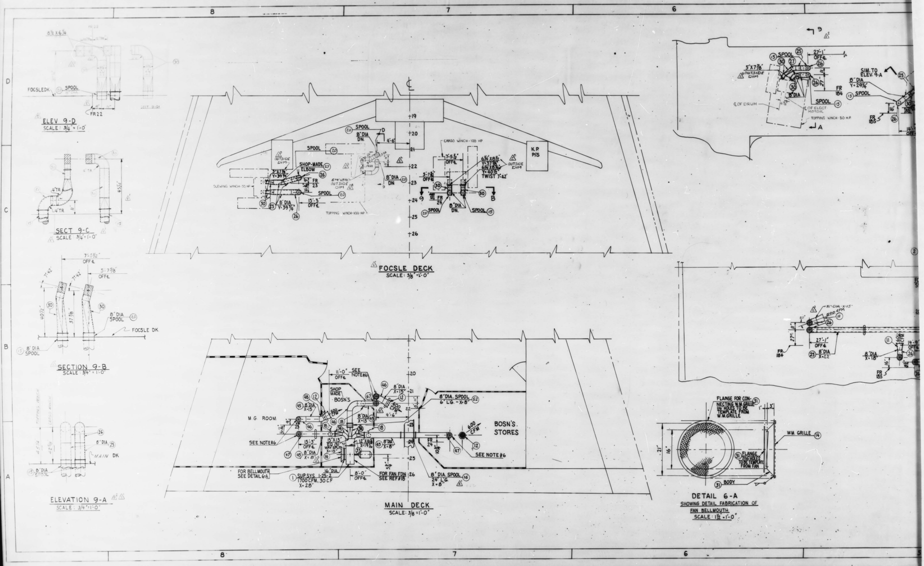
3

ITEM	NAME
1	FAN CENTRIFUGAL ~ S1-25-2
2	~ S2-182-2
3	
4	
5	
6	
7	
8	
9	
10	
11	TERMINAL, TYPE "J" ~ SPECIAL
12	
13	
14	, W.M. GRILLE
15	SPOOL
16	
17	
18	BALANCE DAMPER TYPE E
19	
20	SPOOL
21	
22	
23	
24	
25	PIPE - STL. WELDED
26	ELBOW, STD. PIPE ~ 90°
27	~ 30°
28	- 10°
29	STEEL, SHEET
30	STEEL, SHEET
31	SHEET METAL
32	STEEL, SHEET
33	SHEET METAL
34	SHEET METAL
35	FLAT BAR
36	FLAT BAR CLIPS
37	HEX HD. BOLTS - HVY. ANSI B18.2.1
38	
39	NUTS B18.22
40	WASHERS, FLAT HD.
41	GASKET
42	POP RIVETS
43	SLEEVE PIPE/HEAT SHRINKABLE
44	FLAT BAR CLIPS
45	SPIRAL CONDUIT PIPE
46	ELBOW 90°
47	
48	30°
49	
50	
51	8" I.P.S. 90° ELL SHORT RAD.
52	8" I.P.S. X-HVY PIPE
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORD

1. QUANTITY OF MA
2. HANGERS FOR D
3. "X" DIMENSIONS CA
CENTER OF DUCT
OF DK. UNDER TO
4. ALL FLANGES ON
INFORMATION S
5. FOR INSTRUCTION
6. LOCATE SPOOLS
7. *CHECK WINCH M*

3


ELEV 9-D
SCALE: 3/4" = 1'-0"
FOCSLE DK
SPOOL
FR 22
SECT 9-C
SCALE 3/4" = 1'-0"
4" TR
SECTION 9-B
SCALE: 3/4" = 1'-0"
7'-5 1/2" OFF ℄
5'-7 5/8" OFF ℄
8" DIA SPOOL
FOCSLE DK
ELEVATION 9-A
SCALE: 3/4" = 1'-0"
MAIN DK
FOCSLE DECK
SCALE: 3/8" = 1'-0"
SPOOL
8" DIA DN.
14'-6"
OUTSIDE DIM
SHOP-MADE ELBOW
SLEWING WINCH-50 HP
TOPPING WINCH-100 HP
CARGO WINCH-100 HP
15'-3" OFF ℄
8" DIA Y=39 1/4"
K.P. P/S
TWIST 7-42'
SPOOL
MAIN DECK
SCALE: 3/8" = 1'-0"
M.G. ROOM
SHOP MADE BOSN'S
11'-0" OFF ℄
SEE NOTE #6
8" DIA. SPOOL 6' LG. - X=8"
BOSN'S. STORES
600 CFM
FOR BELLMOUTH SEE DETAIL 6-A
SUP SYS 1-25-2 1700 CFM, 30 CF X=28"
16" DIA
8'-0" OFF ℄
FOR FAN FDN SEE REF #18
8" DIA. SPOOL 24" LG. X=8"
FR 24
DETAIL 6-A
SHOWING DETAIL FABRICATION OF FAN BELLMOUTH
SCALE: 1 1/2" = 1'-0"
FLANGE FOR CONNECTING W.M. GRILLE
W.M. GRILLE
FLANGE
BODY
21"
16"
℄ OF DRUM
℄ OF ELECT MOTOR
TOPPING WINCH-50 HP
SIM. TO ELEV. 9-A
27'-1" OFF ℄
FR 184
FR 185
8
7
6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-191-27

FRAME 3 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-221-1

FRAME 1 OF 6

2 1A

MATERIAL BILL FOR ONE (I) SHIP (CONT.)

REV.	PC. NO.	QTY.	SIZE	SCH/ PRESS	DESCRIPTION	MATERIAL & SPEC	REMARKS	ANSI	MFGR.	REQ. NO.
1	F-42	8	1/8"	—	ENCLOSED SHEAVE ADJ	VARIOUS	SIM TO W. KIDDIE No. R95783	—	—	500119-B 500119-A
	F-43	3	-	-	GREASE TERMINAL	VARIOUS	SEE DET "11-A"	—	—	
2	F-44	3	2" IPS	40	SLEEVE SPECIAL	STEEL ASTM A53 TY. E or S GR B	↓	—	—	UAO
2	F-45	3	3/16" THK Ꝓ		PLATE 2" DIA	ABS GR. A		—	—	UAO CUTTINGS
	F-46	6	1/8"	3000	COUPLING SCR	ASTM-A234		B16.11	BONNEY FORGE	509303
	F-47	6	1/8"	—	GREASE FITTING	MONEL	↓	—	ALEMITE FIG. 1962	509321
1	~~F-48~~	~~4~~	~~5/16"~~		~~DECK BLOCKS~~	~~GALV. MALL. IRON~~	~~SIM. TO WILCOX CRITTENDEN FIG. NO. 3800~~			508119-A
1	~~F-49~~	~~4~~	~~[illegible]~~		~~ANGLE BAR~~	~~STEEL ABS GR. A~~				*
1	F50	2	3"×4"×3/16"		PL	STEEL ABS GR A	DET 11-D			UAO CUTTINGS
1	F51	2	7"×7"×3/4"		PL	STEEL ABS GR A	DET 11-E			UAO CUTTINGS
1	B-1	17	1/2"×1 1/2" LG	—	BOLT-HVY. HEX. HD.	STEEL ASTM-A307 GR B GALV	13 UNC-2A	B1.1 B18.2.1	—	SUPPLY
	B-2	24	3/8"×1" LG	—	↓	↓	18 UNC-2A	↓	—	↓
	B-3	8	1/4"×1" LG	—	↓	↓	20 UNC-2A	↓	—	↓
1	B-4	8	1/2"×1 7/8" LG	—	STUD 7/8" THD ONE END	STAINLESS TYPE 316	13 UNC-2A	↓		509842
1	N-1	17	1/2"	—	NUT HVY. HEX SEMI-FINISHED	STEEL ASTM-A-307 GR B GALV	13 UNC-2B	B1.1 B18.2.2	—	SUPPLY
	N-2	24	3/8"	—	↓	↓	18 UNC-2B	↓	—	↓
	N-3	8	1/4"	—	↓	↓ 62 B	20 UNC-2B	↓	—	↓
1	N-4	8	1/2"	—	NUT	STAINLESS TYPE 316	13 UNC-2B	↓		509830-A
1	F52	2	7"×7"×1/8"		GASKET	COMPRESSED ASBESTOS ASTM D1170 GR. P1B1A	DET 11-E			509824
5	F-53	1	12×6"×10GA	—	ST'N STL MIRROR ANGLE	STAINLESS TY. 316	MIRROR FINISH REQ'D			SHEET METAL

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

GENERAL NOTES

1- ALL WELDING SHALL BE IN ACCORDANCE WITH A.B.S. & U.S.C.G. RULES.

2- THE RADIUS OF THE CENTERLINE OF BENDS FOR PIPE & TUBE SHALL NOT BE LESS THAN 5 TIMES THE NOMINAL DIAMETER.

3- ALL LINES TO BE PROPERLY FLUSHED & CLEANED PRIOR TO CONNECTION.

4- PENETRATIONS TO BE CUT IN FIELD AS REQ'D.

5- COAT WIRE ROPE F-37 & F-41 WITH LUBRIPLATE OR EQUAL AT INSTALLATION.

6- PIPE HANGERS TO BE PLACED WITHIN 12" OF EQUIPMENT OR FLEXIBLE HOSE AND SHALL BE NO FARTHER APART THAN 5'-0" ON THE RUN.

7- DESIGNATIONS "LOCKED CLOSED" OR "LOCKED OPEN" ARE LISTED FOR YARD/TECHNICAL INFORMATION ONLY-NOT FOR ORDERING PURPOSES. LOCKS AND LOCATIONS ARE PROVIDED ON REF #2.

UAO-5014-A

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	8/22 77	8 M	1. REVISED QTY F3 WAS 3, F7 WAS 5, B1 WAS 12, N1 WAS 12, F42 WAS 4, F5 WAS 1 2. ADDED F12, F13, F14, F15, F50 F51, F52, B4, N4 3. DELETED F48, F49, F37 4. REMOVED RES FROM F38		G.G. SHARP LTR DATED 9-21-77
2	10-20 77	1A 1A & 11	1. REVISED THE FOLLOWING: ITEM 44 SIZE WAS 1 1/2" IPS, ITEM 45 DESCRIPTION WAS 1 5/8" DIA. PLATE AND REV. DET. "11A"	WAN	
3	2-17 78	11	1. IN DET "11A" 2 1/2 DIM. WAS 2 7/8"	WAN	
4	4-25 78		1. ADDED OPTICAL DETAIL MARKS	WAN	
5	5-7 80	LM 12,13	1. ADDED ITEM F-53 AND INDICATED SAME IN PARTIAL PLAN "12 A" & ELEV. "13A" PER YIS 4650-22-573	WAN	

HULL	DESIGN	CHARGE
4651	↓	↓
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED
DATE 27 JAN. 77
DRAWN C.B./W.A.N.
APPROVED
TRACED
APPROVED
CHECKED FTG
APPROVED

PLAN NO. M-4650-221-1
ALT. NO. 5

BOW THRUSTER HYDRAULIC PIPING AND MECH. CONTROL

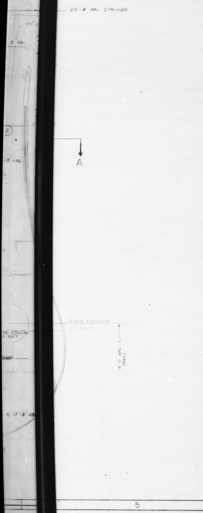
APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	9-21-77				
A.B.S.	12-1-77				
U.S.C.G.	10-12-77				
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				

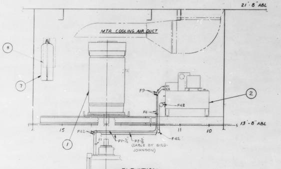
REFERENCE PLANS

NO.	PLAN NO.	TITLE
5	M-4650-391-1 & -2	LADDERS, GRATINGS & FLOOR PLATES
4	H-4650-129-03-01	FORE PEAK FRAMING LONG'L & FLATS FR 16 1/2 FWD
3	H-4650-129-04-11	BRIDGE DECK PLATING & GIRDERS
2	M4650-372-2	ENGINEERS LOCK LIST
1	BF-529	LIST OF SP'L NOTES FOR VENDOR FURN. MAT'LS.

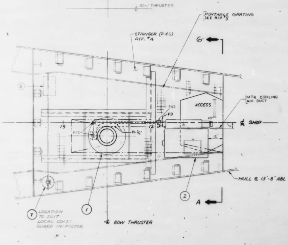
2 1A

M-687


29'-8" ABL STRINGER
8" ABL
2
A
8" ABL
MTR COOLING AIR DUCT
SHIP
6'-0" ABL
13'-8" ABL


21'-8" ABL
MTR COOLING AIR DUCT
5
7
2
F9
F42
F4
13'-8" ABL
15
11
10
F42
F1
P1-3/4"
P3-3/8"
(CABLE BY BIRD-JOHNSON)
F42
1

ELEVATION
LKG TO PORT
SCALE: 3/4" = 1'-0"


℄ BOW THRUSTER
PORTABLE GRATING SEE REF. #5
STRINGER (P & S) REF. #4
6
5
ACCESS
F42
F9
MTR COOLING AIR DUCT
15
12
10"
℄ SHIP
F42
C2
C1
P1-3/4"
12"
HULL @ 13'-8" ABL
2
A
1
7
LOCATION TO SUIT LOCAL COAST GUARD INSPECTOR
℄ BOW THRUSTER

PLAN
ABOVE 13'-8" ABL
SCALE: 3/4" = 1'-0"

MACHINERY & EQUIPMENT LIST

PC. NO.	QTY	DESCRIPTION	LOCATION LEVEL	LOCATION FR.	LOCATION P/S	FDN DWG NO.	VENDOR & DWG NO.			WT. LBS.	REMARKS
1	1	MOTOR, ELEC. 1000 H.P.	13'-8"	13-14	STBD					6600	
2	1	HYD PWR & CONT. UNIT (BOW THRUST.)	↓	10-12	STBD					845	
3	1	HEAD TANK (CONT. UNIT)	37'-8"	10	PORT					70	
4											
5	1	CONTROLLER - HYD POWER UNIT								75	
7		CO2 BOTTLE (BII OR CII)									WALTER KIDDE CO. OR SIMILAR
8		BOW THRUSTER	8'-0"	13-14	STBD						
9		CONTROL HEADER	100'-11"	161	↓		DO27CA11730				BIRD-JOHNSON
10	2	SLAVE STAND	↓	↓	P/S		C087CA11200			45	BIRD-JOHNSON

MATERIAL BILL FOR ONE (1) SHIP

REV	PC. NO.	QTY.	SIZE	SCH/PRESS	DESCRIPTION	MATERIAL & SPEC	REMARKS	WT.	ANSI	MFGR.	REQ. NO.
	P1	20'-0"	3/4" IPS	40	PIPE	STEEL ASTM A53 TYPE "E" OR "S" GR.B	SEE NOTES 128,135 REF*1		B36.10	—	509344
	P2	85'-0"	1 1/2"	↓	↓	↓	↓		↓	—	↓
	P3	170'-0"	3/8"	↓	↓	↓	↓		↓	—	↓
	P4	6'-0"	1/8"	↓	↓	↓	↓		↓	—	↓
	V-1	3	1 1/2" IPS	800	BALL VALVE-SCRD.	STEEL ASTM-A105 STAINLESS STEEL TRIM	LOCKED OPEN-GEN NOTE 7 SEE NOTES 90-93 REF.*1		B2.1 (TYPE D)	JAMESBURY TYPE 2000 FIG.21-22[illegible]	509300
	F-1	2	3/4"	3000#	UNION-SCR'D.	STEEL ASTM-A105	SEE NOTES 175,90-93 REF*1		—	BONNEY FORGE	509303
	F-2			↓	↓	↓	↓		—	↓	[illegible]
1	F-3	4	1 1/2"	↓	UNION -	A105	↓		—	↓	SUPPLY
	F-4	2	3/4"	↓	COUPLING	A234	90-93		B16.11	↓	SUPPLY
1	F-5	6	1 1/2"	↓	↓	↓	↓		↓	↓	↓
	F-6	1	1 1/2"	3000#	TEE-SCR'D.	ASTM-A-234	↓		B16.11	↓	↓
1	F-7	10	1 1/2"	↓	90°ELL-SCR'D.	↓	↓		↓	↓	↓
	F-8										
	F-9	2	3/4" x 30" LG	—	HOSE ASSY. OIL / ABRASION RESISTANT SYN. RUBBER OVER 2 FIBER BRAIDS - W/45° JIC SWV FEM. X NPTF SOLID FEM.	ASTM A576 GR 1020	↓		—	GATES # 12C3H-12FJX45-12FP-30"	509322
	F-10	1	1 1/2" x 30" LG	—	HOSE ASSY. SYN. RUBBER OVER WIRE REINFORCED BRAIDED FIBER W/NPTF SOLID MALE X JIC SWV FEM.	↓	↓		—	GATES # 24C4-24MP-24FJX-30"	↓
	F-11	1	1 1/2"	—	90° ADAPTER	↓	↓		—	GATES 24MJ-24MP90	↓
1	F-12	8	#40-1/2" PITCH		MASTER LINKS	STEEL	FOR ITEM F36				509362
1	F-13	1	1 1/2 x 1"	3000#	REDUCING COUPLING -SCRD.	STEEL ASTM A234	SEE NOTES 90-93 REF.1		B16.11	BONNEY FORGE	509303-A
1	F-14	1	3"x3"x1/4		ANGLE 24" LONG	STEEL ABS GR A	DET 11-D				* UAO
1	F-15	1	3"x3"x1/4		ANGLE 33" LONG	STEEL ABS GR A	DET 11-D				* UAO
	F-16	1	—	—	CONTROL HEAD SHAFT ASSY	VARIOUS	SEE DET "9-C"				
	F-17	2	—	—	SLAVE UNIT SHAFT ASSY	↓	DET "9-A"				
	F-18	1	4" IPS x 4" LG	—	SLEEVE SPECIAL	STEEL-ASTM A53 TYPE "E" OR "S", GR.B	MK FR 4" SCH 40 PIPE		B36.10	—	UAO
	F-19	1	6" x 8.2# [	—	CHANNEL 13 1/8" LG EA	MILD STEEL-ABS-GR.A			—	—	*
	F-20	2	6" x 8.2# [	—	11 3/4"	↓			—	—	*
	F-21	6	6" x 8.2# [	—	4 3/4"	↓			—	—	*
	F-22	5	1 3/4 x 2.12# L	—	SUPPORT 8 7/8"	↓	SEE DET "10-B2"		—	—	*
	F-23	5	1 3/4 x 2.12# L	—	8 2/8"	↓	DET "10-B1"		—	—	*
	F-24	1	1 3/4 x 2.12# L	—	3 3/4"	↓	DET "10-A"		—	—	*
	F-25	1	1 3/4 x 2.12# L	—	3 3/4"	↓	DET "10-A1"		—	—	*
	F-26	6	4" x 1/4" THK	—	FLAT BAR 4"	↓			—	—	*
	F-27	12	1/2"	—	WASHER TAPERED	↓					509330-1X
	F-28	12.	1/2"	—	↓ LOCK						SUPPLY
	F-29	6	1/8" IPS	3000#	UNION SCRD.	ASTM-A105	SEE NOTES 175,90-93 REF*1		—	BONNEY FORGE	509303
	F-30	8	1/8" IPS	↓	ELBOW-90° SCRD.	A234	90-93		B16.11	↓	↓
	F-31	6	1" SHAFT DIA.	—	BALL BEARING FLGD. MOUNTING	VARIOUS	SKF-FY 100- BEARING NO. 479205-100		—	SKF IND., INC.	509376
	F-32	4	1" BORE	—	SPROCKET	STEEL	BOSTON GEAR HKSB12-2		—	—	509362
	F-33	10" LG	1/4"	—	KEYSTOCK	COLD FINISH ASTM A576 GR. 1018	CUT TO SUIT		—	—	J. ANDERSON TO FURNISH
	F-34	2	1" DIA	—	SHAFT (SLAVE UNIT)	↓	6 5/8" LG		—	—	
	F-35	1	1" DIA	—	SHAFT (CONTROL UNIT)	↓	8" LG		—	—	↓
	F-36	1	#40-1/2 PITCH	—	SINGLE STRAND ROLLER CHAIN 8'-LG		BOSTON GEAR CUT 4 PCS 2' LG		—	—	509362
1	~~F-37~~	~~AS REQ'D~~	~~1/8"~~	~~7x7~~	~~WIRE ROPE~~	~~STNLS. STL. 18-8 TY. 304~~			—		~~MAT'L FROM F-41~~
1	F-38	4	5/16"	—	TURNBUCKLE-EYE & EYE	STNLS STL COMM'L	McMASTER-CARR CAT. 78 #3022Y32		—	—	509361
	F-40	10	3/8"	—	SLEEVE	STEEL - SMLS ASTM A53 TY S GR B	3" LG.		—	—	UAO
	F-41	160'-0"	1/8"	7x7	WIRE ROPE	CRES 18-8 TY 304			—		500118-A

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

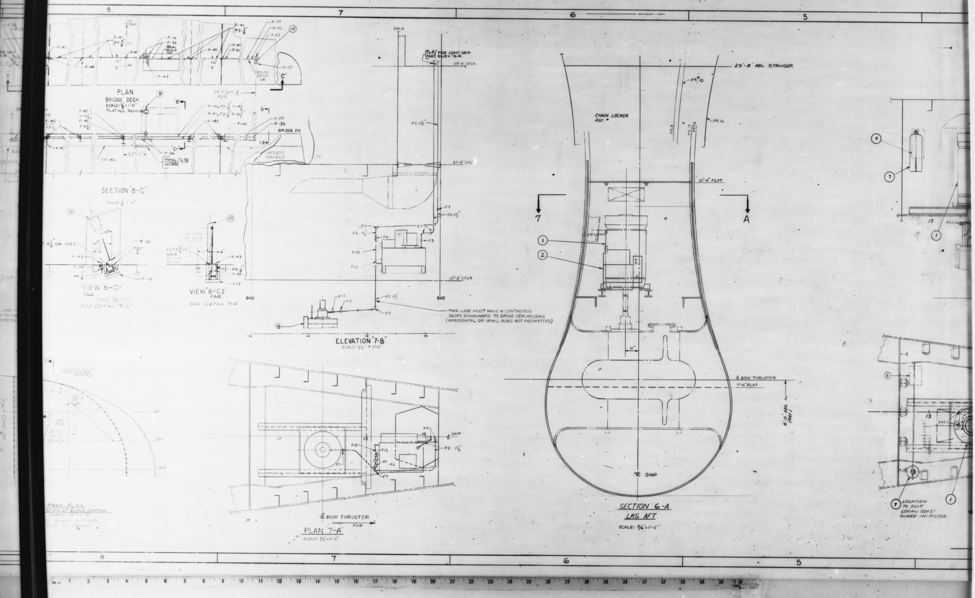
NOV 1980 10X
BUILDERS PLAN NO. M4650-221-1
FRAME 2 OF 6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-221-1

FRAME 3 OF 6



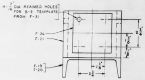
8
7
6
5
PLAN
BRIDGE DECK
SCALE: 3/8" = 1'-0"
PLATING REMOVED
F-41
P3-3/8"
F-38
F-36
F-43
F-40
F-16
F-17
BELOW BRIDGE DK
C
BRIDGE DK
CEILING
PANELS TO BE REMOVABLE
ACCESS PANELS
SECTION "8-C"
VIEW "8-C1"
FAR
SEE DETAIL "9-C"
VIEW "8-C2"
FAR
SEE DETAIL "9-A"
4 3/8" DIA HOLE
F-18
F-30
BHD 11
P2-1½" FOR CONT. SEE PART ELEV. 7B-A
29'-8" STGR
21'-8" STGR
13'-8" STGR
P2-1½"
F7
F3
F6
F10
F11
F13
BHD
THIS LINE MUST HAVE A CONTINUOUS SLOPE DOWNWARD TO DRIVE SEALHOUSING (HORIZONTAL OR UPHILL RUNS NOT PERMITTED)
ELEVATION "7-B"
SCALE: 1/2" = 1'-0"
F12
V1
F7
℄ SHIP
℄ BOW THRUSTER
FWD
PLAN "7-A"
SCALE: 1/2" = 1'-0"
29'-8" ABL STRINGER
FR 10
FR 16
CHAIN LOCKER REF.
21'-8" FLAT
7
A
11"
℄ BOW THRUSTER
7'-6" FLAT
8'-0" ABL (REF.)
℄ SHIP
SECTION 6-A
LKG AFT
SCALE: 3/4" = 1'-0"
①
②
⑤
⑦
⑧
⑨
⑩
15
F42
LOCATION TO SUIT LOCAL COAST GUARD INSPECTOR

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

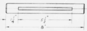
NOV 1980 10X

BUILDERS PLAN NO. M4650-221-1

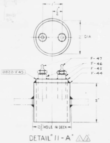
FRAME 4 OF 6


4-7/16" DIA REAMED HOLES FOR B-2 TEMPLATE FROM F-31
F-26
F-21
F-19
F-20
2 3/4"
1 3/8"
1 1/8"
1 1/8"
2 1/4"

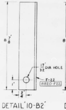
VIEW "10-C"
SCALE: 6" = 1'-0"



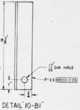
DETAIL "11-B"
SHAFT (F-35)
SCALE: 6" = 1'-0"


1"
2 DIA
F-47
F-46
F-45
F-44
8820-F45
2"
2 5/8" HOLE IN DECK

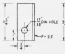
DETAIL "11-A" △△
GREASE TERMINAL (F-43)
SCALE: FULL SIZE


8 7/8"
17/32 DIA HOLE
F-22
8820-F22
1"
3/4"

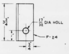
DETAIL "10-B2"
SUPPORT
SCALE: 6" = 1'-0"


8 7/8"
17/32 DIA HOLE
F-23 8820-F23
1"
3/4"

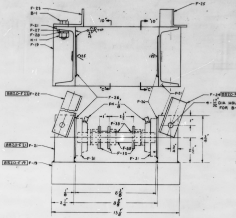
DETAIL "10-B1"
SUPPORT
SCALE: 6" = 1'-0"


3 3/4"
17/32 DIA HOLE
F-25
3/4"

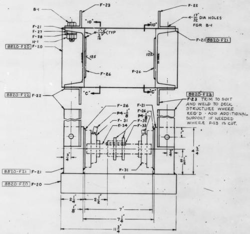
DETAIL "10-A1"
SUPPORT
SCALE: 6" = 1'-0"


3 3/4"
17/32 DIA HOLL
F-24
3/4"

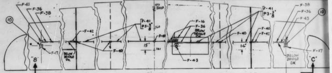
DETAIL "10-A"
SUPPORT
SCALE: 6" = 1'-0"


F-23
B-1
F-25
F-21
F-27
F-28
N-1
F-19
"10"
"10"
1/8 TYP
125
125
"C"
"C"
8820-F22 F-22
F-26
P4-1/8
F-26
F-21
F-24 8820-F24
4-17/32 DIA HOLES FOR B-1
F-33
F-35
F-32
8820-F21 F-21
8820-F19 F-19
F-31
F-31
4 3/4"
2 1/2"
1"
1/8"
2 1/4"
8 3/8"
8 5/8"
13 1/8"

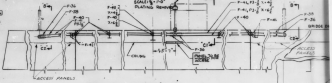
DETAIL "9-C"
CONTROL HEAD SHAFT ASSY (F-16)
SCALE: 6" = 1'-0"


B-1
F-23
F-22
4-17/32 DIA HOLES FOR B-1
F-21
F-27
F-28
H-1
8820-F20 F-20
"10"
"10"
1/8 TYP
125
125
F-26
F-26
F-21 8820-F21
"C"
"C"
8820-F22 F-22
8820-F23
F-23 TRIM TO SUIT AND WELD TO DECK STRUCTURE WHERE REQ'D - ADD ADDITIONAL SUPPORT IF NEEDED WHERE F-23 IS CUT.
F-26
P4-1/8
F-31
F-34
F-26
P4-1/8
F-32
F-33
F-31
8820-F21 F-21
8820-F20 F-20
4 3/4"
2 1/2"
3/4"
2 1/4"
2 1/2"
1/8"
7"
7 1/4"
11 3/4"

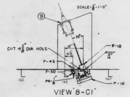
DETAIL "9-A"
SLAVE UNIT SHAFT ASSY (F-17)
SCALE: 6" = 1'-0"


F-43
F-36
F-38
10
F-17
"8"
F-42
BELOW BRIDGE DK
F-40
F-41
P3-3/8
189 SHIP
160
15"
161
F-16
F-36
F-43
F-40
14"
F-41
P3-3/8
F-40
F-42
F-38
F-36
F-43
10
F-17
BELOW BRIDGE DK
"C"
39'-9" OFF ℄ P/S

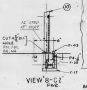
PLAN
BRIDGE DECK
SCALE: 3/8" = 1'-0"
PLATING REMOVED


9
"8"
"8"
"8"
F-36
F-38
F-40
P3-3/8
F-40
X-4 1/2
F-40
X-6 1/2
F-41, P3-3/8 X-4 1/2
F-41, P3-3/8 X-6 1/2
F-40
F-41
F-38
F-36
BRIDGE DK
C2
F-42
CEILING
4'-5 7/8"
C1
F-36
PANEL TO BE HINGED FOR ACCESS
C2
ACCESS PANELS
ACCESS PANELS

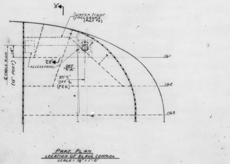
SECTION "8-C"
SCALE: 3/8" = 1'-0"


9
CUT 4 3/8" DIA HOLE
20"
15"
F-18
F-43
F-30
P4-1/8
162
161
160
F-16

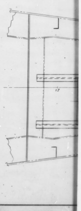
VIEW "8-C1"
FAR
SCALE: 3/4" = 1'-0"
SEE DETAIL "9-C"


10
12" STBD 13" PORT
CUT 4 3/8" DIA HOLE
F51, F52, B4, N4
6"
F-43
P4-1/8
F-30
F-17

VIEW "8-C2"
FAR
SEE DETAIL "9-A"


"8"
WATERTIGHT ENCLOSURE (REF. 73)
"C2"
ACCESS PANEL
SEE "9-A"
89'-9" OFF ℄ (P&S)
℄ CABLE RUN (15" PORT) 12"
161
162
163

PART. PLAN
LOCATION OF SLAVE CONTROL
SCALE: 1/2" = 1'-0"
STBD SHOWN - PORT OPP. EXCEPT AS SHOWN



AUTOMATION INDUSTRIES, INC.
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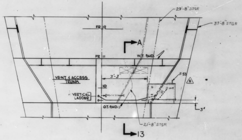
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

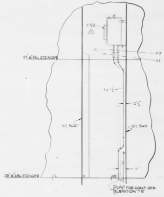
BUILDERS PLAN NO. M4650-221-1

NOV 1980 10X

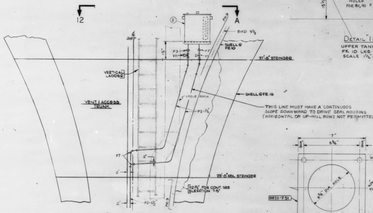
FRAME 5 OF 6


FR 12
29'-8" STGR
37'-8" STGR
A
FR 11
W.T. BHD.
VENT & ACCESS TRUNK
3'-3"
10
F-53
5
VERTICAL LADDER
O.T. BHD.
3'
21'-8" STGR
13
2ND DK

PARTIAL PLAN
"12'-A"

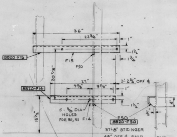

F-53
5
F3
V1
F3
V1
37'-8" ABL STRINGER
P2-1½
2½"
W.T. BHD.
O.T. BHD.
6"
29'-8" ABL STRINGER
12
11
10
P2-1½" FOR CONT. SEE ELEVATION "7-B"

PART ELEVATION "13-A"

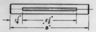

12
A
3
FR 9
BHD 9½
℄ SHIP
15"
F3
V1
F3
V1
SHELL @ FR 10
37'-8" STRINGER
VERTICAL LADDER
VENT & ACCESS TRUNK
CABLE RACK
P2-1½"
SHELL @ FR. 16
F7
2"
2"
29'-8" ABL STRINGER
P2-1½" FOR CONT. SEE ELEVATION "7-B"
2"
P2-1½"
FR. 9

THIS LINE MUST HAVE A CONTINUOUS SLOPE DOWNWARD TO DRIVE SEAL HOUSING (HORIZONTAL OR UP-HILL RUNS NOT PERMITTED)

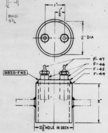
SECTION-12" FWD. FR. 10 LKG. AFT.


36"
22¾"
1"
8820-F15
1½"
1¾"
F15
F50
20⅞"
27"
3'-2¾" OFF ℄
9⅝"
9⅝"
1"
8820-F14
1½"
4"
½"
15½"
5 - ⅜" DIA HOLES FOR B1, N1
F14
F50
8820-F50
37'-8" STRINGER
48" OFF ℄ SHIP
BHD 9½

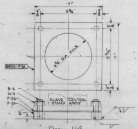
DETAIL "11-D"
UPPER TANK SUPPORT
FR 10 LKG FWD (PORT SIDE)
SCALE 1½" = 1'-0"



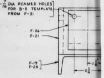
DETAIL "11-B"
SHAFT (F-35)
SCALE: 6" = 1'-0"


1"
½"
2" DIA
F-47
F-46
F-45
F-44
8820-F45
2"
2½" HOLE IN DECK

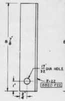
DETAIL "11-A" 2 3
GREASE TERMINAL (F-43)
SCALE: FULL SIZE


7"
5¾"
⅝
⅝
⅝
5¾"
7"
⅝
4¾" DIA HOLE
8820-F51
B-4
N-4
F-52
F-51
½"
SLAVE STAND
CONTROL ASSY
¼

DETAIL 11-E
SCALE 6" = 1'-0"

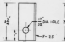

4 - 7/16" DIA REAMED HOLES FOR B-2 TEMPLATE FROM F-31
F-26
F-21
F-19
F-20
1⅛"
2¾

VIEW "10-
SCALE: 6" = 1'-


8⅞"
17/32" DIA HOLE
F-22
8820-F22
1"
¾"

DETAIL "10-B2"
SUPPORT
SCALE: 6" = 1'-0"

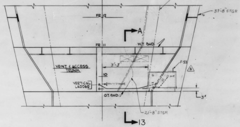
DETA
SU
SCAL


3¾"
17/32" DIA HOLE
1"
F-25
¾"

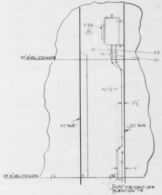
DETAIL "10-A1"
SUPPORT
SCALE: 6" = 1'-0"

DETA
SU
SCAL

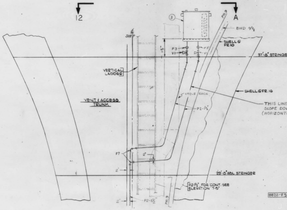
14 13 12 11


29'-8" STGR
37'-8" STGR
FR 12
A
FR 11
W.T. BHD.
VENT & ACCESS TRUNK
3'-3"
10
F-53
5
VERTICAL LADDER
O.T. BHD.
3"
21'-8" STGR
13

PARTIAL PLAN
"12'-A"

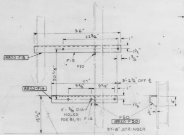

F-53
5
F3
V1
F3
V1
37'-8" ABL STRINGER
P2-1½
2½"
W.T. BHD.
O.T. BHD.
6"
29'-8" ABL STRINGER
12
11
10
P2-1½". FOR CONT. SEE ELEVATION "7-B"

PART ELEVATION "13-A"

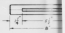

2ND DK
12
A
3
FR 9
BHD 9½
SHIP
SHELL @ FR10
15"
F3
V1
F3
V1
37'-8" STRINGER
VERTICAL LADDER
CABLE RACK
SHELL @ FR.16
VENT & ACCESS TRUNK
P2-1½
F7
2"
2"
29'-8" ABL STRINGER
P2-1½" FOR CONT. SEE ELEVATION "7-B"
2"
P2-1½"
FR 9

THIS LINE MUST HAVE A CONTINUOUS SLOPE DOWNWARD TO DRIVE SEAL HOUSING (HORIZONTAL OR UP-HILL RUNS NOT PERMITTED)

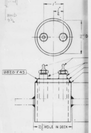
SECTION-12" FWD. FR.10 LKG. AFT.


36"
22¾"
1"
1½"
1¾"
8820-F15
F15
F50
20⅞"
27"
9⅝"
9⅝"
3'-2⅜" OFF ℄
1"
8820-F14
1½"
4"
½"
15½"
5 - ⅝" DIA HOLES FOR B1, N1
F14
F50
8820-F50
37'-8" STRINGER
48" OFF ℄ SHIP
BHD 9½

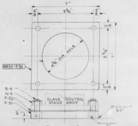
DETAIL "11-D"
UPPER TANK SUPPORT
FR 10 LKG FWD (PORT SIDE)
SCALE 1½" = 1'-0"



DETAIL "11-B"
SHAFT (F-3
SCALE: 6" = 1'-0"


1"
½"
2" D
8820-F45
2½" HOLE IN DECK

DETAIL "11-A" 2 3
GREASE TERMINAL (F-
SCALE: FULL SIZE


7"
5¾"
⅝"
⅝"
⅝"
⅝"
5¾"
7"
4¾" DIA HOLE
8820-F51
B-4
N-4
F-52
F-51
¼"
SLAVE STAND
CONTROL ASSY
¼

DETAIL 11-E
SCALE 6" = 1'-0"

14 13 12 11

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-221-1

FRAME 6 OF 6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-235-12-1

NOV 1980 10X

FRAME 1 OF 2

3 2

HOSE LIST

QTY	LENGTH	SERVICE	DESCRIPTION: HOSE: TYPE	DESCRIPTION: HOSE: SPEC OR MFG NO	DESCRIPTION: COUPLINGS: TYPE	DESCRIPTION: COUPLINGS: SPEC OR MFG NO	THREADS	TYPE ENDS	REMARKS	STOWAGE LOCATION	
	50'-0"	FIRE STATION EXTERIOR	SINGLE JACKET COTTON RUBBER LINED FIRE HOSE 150# W.P.	B.F. GOODRICH STYLE 400 UL	EXPANDED W/ROCKER LUG	CAST BRONZE	N.F.H.T. (7½ T.P.I.)	MALE & SWIV. FEM.	NOTE 5(a) & 6 & 8	FIRE STATION NOS. 1, 8, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 14A, 15A, 15B, 15C, 16A, 16B, 18A	
	75'-0"	FIRE STATION INTERIOR	↓	↓	↓	↓	N.F.H.T. (9 T.P.I.)	↓	NOTE 5(b) & 6 & 8	FIRE STATION NOS. 2, 3, 4, 5, 6, 7, 9, 10, 11, 19, 20, & 24 THRU 37	
3	50'-0"	DECK WASH DOWN	SINGLE JACKET COTTON RUBBER LINED FIRE HOSE W/ACID RES. REINFORCED NEOPRENE COVER 250#	B.F. GOODRICH STYLE 400 UL	↓	↓	N.F.H.T. (9 T.P.I.)	↓	↓ ↓	1-BOS'N STORES MN. DK. FWD 1-DK. LKR. MAIN DK. AFT 1-DK. LKR. NEAR WHEELHOUSE	
6	50'-0"	WASH DOWN	RUBBER REINFORCED W/ 2 PLY SYNTHETIC YARN	GATES 710 358 175 PSI	CAST BRONZE LONG SHANK CPLG. HEX MALE x HEX SWIV. FEM.	GATES 7319-24 MALE 7319-25 FEMALE	11½ THREADS PER INCH	MALE & FEMALE	NOTE 5(C)	3-BOS'N STORES FWD 3-DK. LKR. AFT	
4	25'-0"	↓	↓	↓	↓	↓	↓	↓	↓ ↓	2-BOS'N STORES FWD 2-DK. LKR. AFT	
8	40'-0	SHIP SERVICE AIR	AIR HOSE - OIL & MILDEW RESISTANT BRAID	GATES FIG. 198	UNIVERSAL QUICK ACTING COUPLING BOTH ENDS	GATES - 7223-12 BRONZE	—	—	SEE GEN NOTE #7	4-ENGINEERS STOREROOM IN E.R. 2-BOS'N LKR. FWD 2-DK. LKR. AFT	
2	50'-0"	FRESH WATER SHORE FILL POTABLE	SINGLE JACKET ALL VITACORD W/ABSORBENT LINED	NAT. FIRE HOSE CORP.	FEMALE SWIV. x MALE ROCKER LUG STYLE	J.W. MOON INC. S267-R	STRAIGHT IRON PIPE HOSE THREADS 2"-11½ TPI	MALE & FEMALE	NOTE 5(E) & 3	1-PORT, 1-STBD MAIN DK. IN CABIN ADJACENT TO FRESH WTR SHORE CONN.	
6	40'-0"	CARGO OIL LOADING AND DISCHARGE	STAIN. STL. CONVOLUTED BELLOWS TYPE FLEXIBLE HOSE W/WOVEN WIRE ARMOR	PENFLEX #201-81	ONE END FLGD. F&D 150# ASA STD. & THE OTHER END CAMLOCK SAFETY FLANGE CPLG. W/2 STNS. STL. CAMS; ONE(1) LOCK'G BAR TO BE FURNISHED W/EACH HOSE		—	—	STNS. ST'L FLANGES	4-BOS'N STORES FWD. 2-DK. LKR. AFT	
2	20'-0"	↓	↓	↓	↓	↓	—	—	↓	1-BOS'N STORES FWD. 1-DK. LKR. AFT	
	10'-0"	↓	↓	↓	↓	↓	—	—	↓	3-BOS'N STORES FWD.	
1	50'-0"	STEAM HOSE	STEAM HOSE 125# SATURATED STEAM PRESSURE	BOSTON IND PROD. CONCORD STD.	INTERLOCKING CPLG. WASHER JOINT	GATES 7311-53	STRAIGHT IRON PIPE HOSE THRD 11½ TPI	FEMALE SWIVEL BOTH ENDS	NOTE 5(L)	ENG. RM. STOREROOM	
	20'-0"	CARGO OIL LOADING AND DISCHARGE	STAIN. STL. CONVOLUTED BELLOWS TYPE FLEXIBLE HOSE W/WOVEN WIRE ARMOR	PENFLEX #201-81	ONE END FLGD. F&D 150# ASA STD. & THE OTHER END CAMLOCK SAFETY FLANGE CPLG. W/ 3 STNS. STL. CAMS; ONE(1) LOCKING BAR TO BE FURNISHED FOR EACH HOSE		—	—	STNS. ST'L. FLANGES	1-BOS'N STORES FWD 2-DK. LKR. AFT	
4	40'-0"	AIR TO CARGO OIL PUMP	AIR HOSE - OIL & MILDEW RESISTANT COVER - BUNA-N TUBE	GOODALL L-84 150 PSI	UNIVERSAL QUICK ACTING CPLG. BOTH ENDS	DIXON "AIR KING" #AB-11 BRONZE 2 LUG TYPE	—	—	—	ENG. RM. STOREROOM	
1	50'-0"	CARGO OIL PUMP EXHAUST	↓	↓	↓	DIXON "AIR KING" #AB-21 BRONZE 4 LUG TYPE	—	—	—	↓	
1	70'-0"	↓	↓	↓	↓	↓	—	—	—	↓	
	50'-0"	VALVE FLUSHING	WATER HOSE WRAPPED DUCK CONSTRUCTION 4 PLY W/WATER RUBBER COVER 125# W.P.	GOODALL "IMPACT" N-520	FEMALE SWIVEL - ROCKER LUG STYLE	J.W. MOON S267-R	ASHT (11½ TPI)	FEMALE SWIVEL BOTH ENDS	NOTE 5(J)	↓	
		[illegible]	DELMAR WATER SUCTION 100	ELECT. HOSE & RUBBER CO. [illegible]	↓	↓	ASHT (8 TPI)	MALE & SWIVEL FEMALE	NOTE 5(K)	↓	
		[illegible]	WATER HOSE WRAPPED DUCK CONSTRUCTION 4 PLY W/WATER RUBBER COVER [illegible]	GOODALL "IMPACT" N-520	↓	↓	ASHT (11½ TPI)	FEMALE SWIVEL BOTH ENDS	NOTE 6(J)	↓	
1	40'-0"	EMICAL MIX'G TK. SUCTION & DISCHARGE	DELMAR GAS & OIL HOSE	ELECTRIC HOSE & RUBBER CO. CAT. NO. 184402	FEM. SWIVEL ROCKER LUG STYLE	JOHN W. MOON, INC. S267-R	ASHT (8 TPI)	FEMALE-BOTH ENDS	NOTE 5(K)	ENG. RM. STOREROOM	

GENERAL NOTES

1- FEMALE COUPLINGS ARE TO BE FURNISHED WITH RUBBER OR LEATHER WASHERS AS REQUIRED FOR SERVICE INTENDED.

2- SEE NOTES 90-93 ON REF. NO 2 FOR ALL MATERIAL.

3- POTABLE WATER HOSE TO BE MARKED "FOR POTABLE WATER ONLY" AND STOWED IN SUCH A MANNER AS TO BE FREE FROM CONTAMINATION

1▷ 4- MARKING FOR ALL FIRE EQUIP. SHALL BE IN ACCORDANCE WITH USCG CARGO & MISCELLANEOUS VESSEL REGULATIONS CG-257 SECTION 97.37

5- ALL HOSE COUPLINGS TO HAVE HOSE THREADS IN ACCORDANCE WITH THE FOLLOWING STANDARDS.

SERVICE (HOSE)	SIZE	MALE O.D.	THRD/IN.	THRD. STD.
(a) FIRE	2½"	3.0686"	7½	N.F.H.T.
(b) FIRE & DK. WASHDN	1½"	1.9900"	9	N.F.H.T.
(c) WASHDOWN	¾"	1.0625"	11½	G.H.T.
(d) SHIP SERV. AIR	¾"	—	—	—
(e) POTABLE WTR	2"	2.3528"	11½	A.S.H.T.
(f) CARGO OIL	2½"	3.0686"	7½	N.F.H.T.
(g) CARGO OIL	4"	—	—	—
(h) CARGO OIL (AIR SUPPLY)	1"	—	—	—
(i) CARGO OIL (AIR EXHAUST)	1½"	—	—	—
(j) VALVE FLUSH'G	1½"	1.8788"	11½	A.S.H.T.
(k) CHEM. MIX. TK.	2½"	2.8434"	8	A.S.H.T.
(l) STEAM	1"	1.2951"	11½	A.S.H.T.

6- ALL FIRE HOSE SHALL BE HYDROSTATICALLY TESTED TO THE HIGHEST RELIEF VALVE SETTING (145 PSIG)

7- HOSE SHALL CONFORM TO MARITIME ADMINISTRATION STD. SPEC. 53-MA-10.

1▷ 8- ITEMS #1 & #2 TO BEAR UNDERWRITERS LABORATORIES "MARINE TYPE LABEL" IN ACCORDANCE WITH LATEST USCG. REQUIREMENTS.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	5/6/78		1- REVISED COMPLETE DESCRIPTION OF ITEMS 8, 9 & 10 (WERE RES.) ADDED ITEM #17 & 19; THE ABV. WAS MADE TO COMPLY W/ OWNER'S APPROVAL LTR DATED 12-20-77. 2- DELETED RES. FOR ITEM NOS. 13, 14 & 15. 3- ADDED GEN NOTE #8 & APPLIED SAME TO ITEMS #1 & #2.	PCG	G. G. SHARP LTR DATED 5-4-78
2	7/19/78 8/8/78		1- REVISED HOSE TYPE & MANUF. NO. FOR ITEM NO. 7 (FRESH WTR SHORE FILL, POTABLE. 2- REVISED COUPLING TYPE FOR ITEM NOS. 8, 9, & 10 (WAS THREE CAM). APPROVED BY GGS. LTR DATED 6-19-78	PCG PCG	7/19/78 Aja

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT. CONTAINERSHIP	8450

JOB NO. 235

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 11-11-77
DRAWN P.C. GOLDMAN
APPROVED
TRACED
APPROVED
CHECKED R.W.F.
APPROVED

PLAN NO. M4650-235-12-1
ALT. NO. 2

HOSE SCHEDULE

APPROVAL LETTERS					
HULL	4650-56				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	12-20-77				
A.B.S.	1-10-78				
U.S.C.G.	╳				
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
2	EF-529	LIST OF SPEC. NOTES FOR VENDOR FURN. MAT'L.
1	M4650-182-12-3	FIRE STATION DETS. & EQUIPMENT LIST

DATE OF ISSUE			
ALTERATION	0	1	2
ENGINEERING DISTRIBUTION			
MAIL: OWNERS			
AMERICAN BUREAU			
LLOYD'S R.S.			
U.S.M.A.			
U.S. NAVY			
U.S.C.G.			
JOINER CONT'R.			
INSPECTION: OWNER'S INSP.			
AM. BU. INSP.			
LLOYD'S INSP.			
U.S.M.A. INSP.			
U.S. NAVY INSP.			
U.S.C.G. INSP.			
OFFICE: HULL DRAFT. - 21	1	1	1
MACH. DRAFT. - 22	2	2	2
ELEC. DRAFT. - 23	1	1	1
OUTFIT. DRAFT. - 25			
ESTIMATING			
[illegible]	1	1	1
MISC.: PRODUCTION (BCD)			
ORDER DEPT.			
JOINER CONT. YARD			
TOTAL ENG'R. DIST.			
YARD DISTRIBUTION			
YARD: GEN. [illegible]	1	1	1
[illegible]	1	1	1
PIECE RATE - 11	1	1	1
TEST DEPARTMENT			
J. SIMMONS	1	1	1
PLANNING	1	1	1
STRUCTURAL: GROUND ASSEMBLY	2	2	2
35 DEPT.	2	2	2
P. McNAIR	1	1	1
H. LEVY	1	1	1
NO. WAY			
NO. WAY			
NO. WAY			
NO. WAY			
STRUCT. SUPER.	2	2	2
OPTICAL DETAIL - 45	2	2	2
WET DOCK			
MACH'Y & OUTFIT.: PIPE SHOP - 52	2	2	2
OUTFIT. #1 PIER	1	1	1
PIPE DRAFT. - 52	2	2	2
BOILER SHOP - 58			
OUTSIDE MACH. - 60	1	1	1
RIGGING DEPT.	2	2	2
ELECTRIC SHOP - 70			
SHEET MET. SHOP - 74	2	2	—
COPPER SHOP - 51			
PAINT SHOP - 75	1	1	1
OTHER: WELDING			
G. MARY [illegible]	1	1	1
MOLD LOFT - 41	1	1	1
BRACKET SHOP			
TOTAL YARD DIST.			

M-688

SQ. FT.

HOSE LIST

ITEM NO	QTY	LENGTH	SIZE	SERVICE	DESCRIPTION: HOSE: TYPE	DESCRIPTION: HOSE: SPEC OR MFG NO	DESCRIPTION: COUPLINGS: TYPE	DESCRIPTION: COUPLINGS: SPEC OR MFG NO	THREADS	TYPE ENDS	REMARKS	STOWAGE LOCATION	
1	19	50'-0"	2½	FIRE STATION EXTERIOR	DOUBLE JACKET COTTON RUBBER LINED FIRE HOSE 125# W.P.	B.F. GOODRICH STYLE 400 UL	EXPANDED W/ROCKER LUG	CAST BRONZE	N.F.H.T. (7½ T.P.I.)	MALE & SWIV. FEM.	NOTE 5(a) & 6 & 8	FIRE STATION NOS. 1, 8, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 14A, 15A, 15B, 15C, 16A, 16B, 18A	
2	25	75'-0"	1½	FIRE STATION INTERIOR	↓	↓	↓	↓	N.F.H.T. (9 T.P.I.)	↓	NOTE 5(b) & 6 & 8	FIRE STATION NOS. 2, 3, 4, 5, 6, 7, 9, 10, 11, 19, 20, & 24 THRU 31	
3	3	50'-0"	1½	DECK WASH DOWN	SINGLE JACKET COTTON RUBBER LINED FIRE HOSE W/ACID RES. CALENDERED NEOPRENE COVER SBR	B.F. GOODRICH STYLE 500 UL	↓	↓	N.F.H.T. (9 T.P.I.)	↓	↓ ↓	1-BOS'N STORES MAIN DK. FWD 1-DK. LKR. MAIN DK. AFT 1-DK. LKR. NEAR WHEELHOUSE	
4	6	50'-0"	¾	WASH DOWN	RUBBER REINFORCED W/ 2 PLY SYNTHETIC YARN	GATES FIG. 35B 175 PSI	CAST BRONZE LONG SHANK CPLG. HEX MALE x HEX SWIV. FEM.	GATES 7319-24 MALE 7319-25 FEMALE	11½ THREADS PER INCH	MALE & FEMALE	NOTE 5(C)	3-BOS'N STORES FWD 3-DK. LKR. AFT	
5	4	25'-0"	¾"	↓	↓	↓	↓	↓	↓	↓	↓ ↓	2-BOS'N STORES FWD 2-DK. LKR. AFT	
6	8	40'-0	¾"	SHIP SERVICE AIR	AIR HOSE - OIL & MILDEW RESISTANT 2 PLY SYN. BRAID BUNA-N TUBE W/HYPALON COVER	GATES FIG. 19B	UNIVERSAL QUICK ACTING COUPLING BOTH ENDS	GATES - 7223-12 BRONZE	—	—	SEE GEN NOTE #7	4-ENGINEERS STOREROOM IN E.R. 2-BOS'N LKR. FWD 2-DK. LKR. AFT	
7	2	50'-0"	2"	FRESH WATER SHORE FILL POTABLE	SINGLE JACKET ALL VYTACORD W/NEOPRENE TUBE	NAT. FIRE HOSE CORP. #44-AFE	FEMALE SWIV. x MALE ROCKER LUG STYLE	J.W. MOON INC. S-267-R	STRAIGHT IRON PIPE HOSE THREADS 2"-11½ TPI	MALE & FEMALE	NOTE 5(e) & 3	1-PORT, 1-STBD MAIN DK. IN CABIN ADJACENT TO FRESH WTR SHORE CONN.	
8	6	40'-0"	2½"	CARGO OIL LOADING AND DISCHARGE	STAIN. ST'L CONVOLUTED BELLOWS TYPE FLEXIBLE HOSE W/WOVEN WIRE ARMOR	PENFLEX-201-81	ONE END FLG'D. F&D 150# ASA STD. & THE OTHER END CAMLOCK SAFETY FLANGE CPLG. W/2 STNS. ST'L CAMS; ONE(1) LOCK'G BAR TO BE FURNISHED W/EACH HOSE		—	—	STNS. ST'L FLANGES	4-BOS'N STORES FWD. 2-DK. LKR. AFT	
9	2	20'-0"	2½"	↓	↓	↓	↓	↓	—	—	↓	1-BOS'N STORES FWD. 1-DK. LKR. AFT	
10	3	10'-0"	2½"	↓	↓	↓	↓	↓	—	—	↓	3-BOS'N STORES FWD.	
11	1	50'-0"	1"	STEAM HOSE	STEAM HOSE 125# SATURATED STEAM PRESSURE	BOSTON IND PROD. CONCORD STD.	INTERLOCKING CPLG. WASHER JOINT	GATES 7311-53	STRAIGHT IRON PIPE HOSE THRD -11½ TPI	FEMALE SWIVEL BOTH ENDS	NOTE 5(L)	ENG. RM. STOREROOM	
12	3	20'-0"	4"	CARGO OIL LOADING AND DISCHARGE	STAIN. ST'L CONVOLUTED BELLOWS TYPE FLEXIBLE HOSE W/ WOVEN WIRE ARMOR	PENFLEX-201-81	ONE END FLGD. F&D 150# ASA STD. & THE OTHER END CAMLOCK SAFETY FLANGE CPLG. W/ 3 STNS. STL. CAMS; ONE(1) LOCKING BAR TO BE FURNISHED FOR EACH HOSE		—	—	STNS. ST'L. FLANGES	1-BOS'N STORES FWD 2-DK. LKR. AFT	
13	4	40'-0"	1"	AIR TO CARGO OIL PUMP	AIR HOSE - OIL & MILDEW RESISTANT COVER - BUNA-N TUBE	GOODALL L-84 150 PSI	UNIVERSAL QUICK ACTING CPLG. BOTH ENDS	DIXON "AIR KING" #AB-11 BRONZE 2 LUG TYPE	—	—	—	ENG. RM. STOREROOM	
14	1	50'-0"	1½"	CARGO OIL PUMP EXHAUST	↓ ↓	↓ ↓	↓	DIXON "AIR KING" #AB-21 BRONZE 2 LUG TYPE	—	—	—	↓	
15	1	70'-0"	1½"	↓ ↓ ↓ ↓	↓ ↓	↓ ↓	↓	↓ ↓	—	—	—	↓	
16	1	50'-0"	1½"	VALVE FLUSHING	WATER HOSE WRAPPED DUCK CONSTRUCTION 4 PLY W/OUTER RUBBER COVER 125# W.P.	GOODALL "IMPACT" N-320	FEMALE SWIVEL - ROCKER LUG STYLE	J.W. MOON S-267-R	ASHT (11½ TPI)	FEMALE SWIVEL BOTH ENDS	NOTE 5(J)	↓	
[illegible]	[illegible]	[illegible]	[illegible]	BILGE SUCTION	DELMAR WATER SUCTION 150	ELECT. HOSE & RUBBER CO. WTR. INDEX 2000	↓	↓	ASHT (8 TPI)	MALE & SWIVEL FEMALE	NOTE 5(K)	↓	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	WATER HOSE WRAPPED DUCK CONSTRUCTION 4 PLY W/OUTER RUBBER COVER 125# W.P.	GOODALL "IMPACT" N-320	↓	↓	ASHT (11½ TPI)	FEMALE SWIVEL BOTH ENDS	NOTE 5(J)	↓	
18	1	40'-0"	2½"	CHEMICAL MIXING TK. SUCTION & DISCHARGE	DELMAR GAS & OIL HOSE	ELECTRIC HOSE & RUBBER CO. CAT. NO. 18440R	FEM. SWIVEL ROCKER LUG STYLE	JOHN W. MOON, INC. S 267-R	ASHT (8 TPI)	FEMALE-BOTH ENDS	NOTE 5(K)	ENG. RM. STOREROOM	

GENERAL NOTES

1- FEMALE COUPLINGS ARE TO BE FURNISHED WITH RUBBER OR LEATHER WASHERS AS REQUIRED FOR SERVICE INTENDED.

2- SEE NOTES 90-93 ON REF. NO 2 FOR ALL MATERIAL

3- POTABLE WATER HOSE TO BE MARKED "FOR POTABLE WATER ONLY" AND STOWED IN SUCH A MANNER AS TO BE FREE FROM CONTAMINATION

1 ▷ 4- MARKING FOR ALL FIRE EQUIP. SHALL BE IN ACCORDANCE WITH USCG CARGO & MISCELLANEOUS VESSEL REGULATIONS CG-257 SECTION 97:37

5- ALL HOSE COUPLINGS TO HAVE HOSE THREADS IN ACCORDANCE WITH THE FOLLOWING STANDARDS.

SERVICE (HOSE)	SIZE	MALE O.D.	THRD/IN.	THRD. STD.
(a) FIRE	2½"	3.0686"	7½	N.F.H.T.
(b) FIRE & DK. WASHDN	1½"	1.9900"	9	N.F.H.T.
(c) WASHDOWN	¾"	1.0625"	11½	G.H.T.
(d) SHIP SERV. AIR	¾"	—	—	—
(e) POTABLE WTR	2"	2.3528"	11½	A.S.H.T.
(f) CARGO OIL	2½"	3.0686"	7½	N.F.H.T.
(g) CARGO OIL	4"	—	—	—
(h) CARGO OIL (AIR SUPPLY)	1"	—	—	—
(i) CARGO OIL (AIR EXHAUST)	1½"	—	—	—
(j) VALVE FLUSH'G	1½"	1.8788"	11½	A.S.H.T.
(k) CHEM. MIX. TK.	2½"	2.8454"	8	A.S.H.T.
(l) STEAM	1"	1.2951"	11½	A.S.H.T.

6- ALL FIRE HOSE SHALL BE HYDROSTATICALLY TESTED TO THE HIGHEST RELIEF VALVE SETTING (145 PSIG)

7- HOSE SHALL CONFORM TO MARITIME ADMINISTRATION STD. SPEC. 53-MA-10.

1 ▷ 8- ITEMS #1 & #2 TO BEAR UNDERWRITERS LABORATORIES "MARINE TYPE LABEL" IN ACCORDANCE WITH LATEST USCG. REQUIREMENTS.

ALTERATIONS			
NO.	DATE	ZONE	DESCRIPTION
1	3/6/78		1- REVISED COMPLETE DESCRIPTION OF ITEMS 8, 9 & 10 (LWES RES.) ADDED ITEM #17 & 18. ABS WAS MADE TO COMPL OWNER'S APPROVAL LTR DA 12-20-77. 2- DELETED REQ. FOR ITEM 13, 14 & 15 3- ADDED GEN NOTE #8 & APPLIED SAME TO ITEMS #1
2	7/19/78 8/16/78		1- REVISED HOSE TYPE & MFG NO. FOR ITEM NO. 7 (FRESH WTR SHORE FILL, POTAB 2- REVISED COUPLING TYPE ITEM NOS. 8, 9 & 10 (WAS THREE CAM) APPROVED USCG. LTR DATED 6-19-78

HULL	DESIGN
4651	
4650	27,340 DWT CONTAINERSHIP

JOB

BETHLEHEM STEEL CORPORAT
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 11-11-77
DRAWN P.C. GOLDMAN
APPROVED
TRACED
APPROVED
CHECKED R.W.F.
APPROVED

PLAN NO. M4650-235-12-1

HOSE SCHEDULE

	APPROVAL LETTERS			
HULL	4650-51			
APPROVED BY	DATE	DATE	DATE	DAT
OWNERS	12-20-77			
A.B.S.	1-10-78			
U.S.C.G.	☒			
LLOYD'S R.S.	☒			
U.S.P.H.S.	☒			

NO.	PLAN NO.	TITLE
2	EF-529	LIST OF SPEC. NOTES FOR VENDOR FURN. MAT'L.
1	M4650-182-12-3	FIRE STATION DETS. & EQUIPMENT LIST

REFERENCE PLANS

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-235-12-1

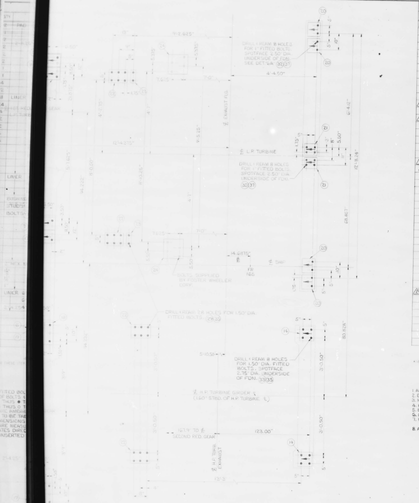
FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

BUILDERS PLAN NO. M4650-322-1

NOV 1980 10X

FRAME 1 OF 4


DRILL & REAM 8 HOLES FOR 1" FITTED BOLTS. SPOTFACE 2.50" DIA. UNDERSIDE OF FDN. SEE DET. "6A" 32 37
9'-2.625"
4'-4.50"
7'-0"
7.625"
℄ EXHAUST FLG.
12'-4.375"
℄ L.P. TURBINE
DRILL & REAM 8 HOLES FOR 1" FITTED BOLTS SPOTFACE 2.50" DIA UNDERSIDE OF FDN. 30 37
6'-4.12"
12'-8.24"
68.857"
14.6875"
FR 165
℄ SHIP
BOLTS SUPPLIED BY FOSTER WHEELER CORP.
DRILL & REAM 28 HOLES FOR 1.50" DIA. FITTED BOLTS 27 33
DRILL & REAM 8 HOLES FOR 1.50" DIA. FITTED BOLTS. SPOTFACE 2.75" DIA. UNDERSIDE OF FDN. 33 35
80.828"
5'-10.50"
3'-0.50"
℄ H.P. TURBINE GIRDER & (1.60" STBD. OF H.P. TURBINE ℄)
167.9" TO ℄ SECOND RED. GEAR
123.00"
℄ H.P. TURB. EXHAUST
13'-3"
20
21
14
22
23
24

MATERIAL LIST

ALT.	ITEM	QTY	DESCRIPTION	MAT'L	SPEC.	REMARKS	REQ'N
△1	~~1~~	~~2~~	~~PAD 21.50"X10"X.750" (3/4 THK.)~~	~~STEEL~~	~~ABS GRA~~	~~L.P. TURBINE ZONE #9~~	
	~~2~~	~~1~~	~~18.50"X10"X.750"~~			~~L.P. TURBINE #8~~	
	~~3~~	~~2~~	~~10"X10"X.750"~~			~~H.P. TURBINE GIRDER #7~~	
	4	2	13.50"X14"X.750"			1 ST. REDUCTION GEAR #7	*
	5	2	13"X14"X.750"			#7	*
	6	2	15.50"X14.50"X.750"			#9	*
	7	1	18"X11.50"X.750"			#8	*
	8	1	17"X11"X.750"			#8	*
	9	4	11.50"X10.50"X.750"			2 ND. REDUCTION GEAR #7	*
	10	2	11.25"X10.50"X.750"			2 ND. REDUCTION GEAR #7	*
	11	8	LINER 10"X7"X1.50" (1½" THK.)			THRUST BEARING #7	*
△2	12	24	6"X4"X1.25" (1¼" THK.)			LINE SHAFT BEARING #7	*
	13	4	11.50"X6"X1.75" (1¾" THK.)			1 ST. REDUCTION GEAR #8	*
△1	14	2	9"X9"X2"			H.P. TURBINE GIRDER #8	
	15	2	10"X8.50"X1.75" (1¾" THK.)			2 ND. REDUCTION GEAR #8	*
	16	4	10"X8.50"X1.75"			2 ND. REDUCTION GEAR #8	*
	17	4	10.50"X7.25"X1.75"			1 ST. REDUCTION GEAR #8	*
	18	2	13.50"X5.50"X1.75"			#9	*
	19	2	8"X4"X1.75"			#9	*
△1	20	4	9"X8"X2"			L.P. TURBINE #9	
	21	2	8"X7.50"X2"			L.P. TURBINE #9	
	22	4	LINER 11.75"X9"X.750" (3/4 THK.)			℄ H.P. TURBINE G'D'R #9	*
	23	2	9"X3.50"X.750"			#10	*
	24	2	12"X12"X.750"			℄ CONDENSER #10	*
	25	8	BUSHINGS	BRONZE	B-584 ALLOY 947	SEE DETAIL "6A"	
	26	16	STUDS- CUT FROM 2.25" RD. BAR 16'-0" LG	O.H. ST'L	A-576 GR.1045	SEE "THRU FITTED STUD DETAIL" ZONE NO. 5	500102-K
	27	34	BOLTS- 2.375" HEX. 24'-0"			BOLT NO. 6	*
	28	32	2.375" 22'-0"				*
	29	28	2.375" 16'-0"				*
	30	8	1.625" 5'-0"				*
	31	30	2" 20'-0"				*
	32	8	1.625" 5'-0"				*
	33	8	2.375" 6'-0"				*
	34	16	2" HEX. NUTS (MACHINED) ANSI B18.2.2	STEEL	A-194 GR 2	THRUST BEARING	500110-RB
	35	102	1½"			H.P. & L.P. TURB. AND 1ST. & 2ND. RED. GEAR	
	36	30	1¼"			LINE SHAFT BEARING	
	37	16	1"			L.P. TURBINE	
△2	38	6	LINER 6"X5"X1.25" (1¼" THK.)		ABS GRA	LINE SHAFT BEARING ZONE #7	*
	39	4	6"X7"X1.50" (1½" THK.)			THRUST BEARING #10	*
	40	4	4"X5.50"X1.75" (1¾" THK.)			1 ST. REDUCTION GEAR #10	*

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	10-11-77		1. DELETED ITEMS 1 THRU 3 (WERE RES.) 2. THICKNESS OF ITEMS 14, 20 AND 21 NOW 2" (RELEASED RES.)		G.G. SHARP LTR DATED 9-29-77
		6	3. REVISED "A" DIMENSION & FITTED LENGTH OF ITEM NO. 33 THE ABOVE ALT WAS MADE TO COMPLY WITH CHANGE MADE ON Y.I.S. H4650-21-77	WAN	
		5	4. 6'-7" DIM WAS 6'-9"		
2	11-9-77	7	1. IN DET OF "LINERS FOR STEADY BRGS" 6" DIM WAS 8".		
		BM	2. REVISED SIZE OF: ITEM 12 WAS 8"X4"X1.25" ITEM 38 WAS 8"X5"X1.25" 1 & 2 TO SUIT FOUNDATION	WAN	

GENERAL NOTES

1. ALL HOLES FOR FITTED BOLTS TO BE REAMED WITH LINERS IN PLACE.
2. EXACT LENGTH OF BOLTS & THICKNESS OF LINERS TO BE TAKEN FROM WORK.
3. HOLES SHOWN THUS ● TO BE REAMED FOR FITTED BOLTS.
4. HOLES SHOWN THUS ○ TO BE DRILLED.
5. BOLTS & NUTS ARE AMERICAN NAT. STD. HVY. CLASS 3 FIT, 8 THREADS PER INCH.
6. LINER BLOCKS TO BE TACK WELDED AFTER FITTING.
7. FORE & AFT DIMENSIONS MARKED ℄ ARE MEASURED PARALLEL TO BASELINE ALL OTHER FORE & AFT DIMENSIONS ARE MEASURED ALONG RAKE OF SHAFT.
8. ARROW ⧫ INDICATES DIRECTION OF TAPER FROM LOW END TO HIGH END OF LEVELING PADS AND DIRECTION LINERS TO BE INSERTED

UAO-50141

REFERENCE PLANS

NO.	PLAN NO.	TITLE
3	H-4650-129-11-44	FOUNDATION - SHAFT STEADY BRGS.
2	H-4650-129-10-2	
1	H-4650-129-10-1	MAIN ENGINE FOUNDATION

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 322

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1"=1'-0" & AS NOTED DATE 20 JUNE 1977
DRAWN W.A. NOETZEL APPROVED
TRACED APPROVED
CHECKED F.T.G. APPROVED

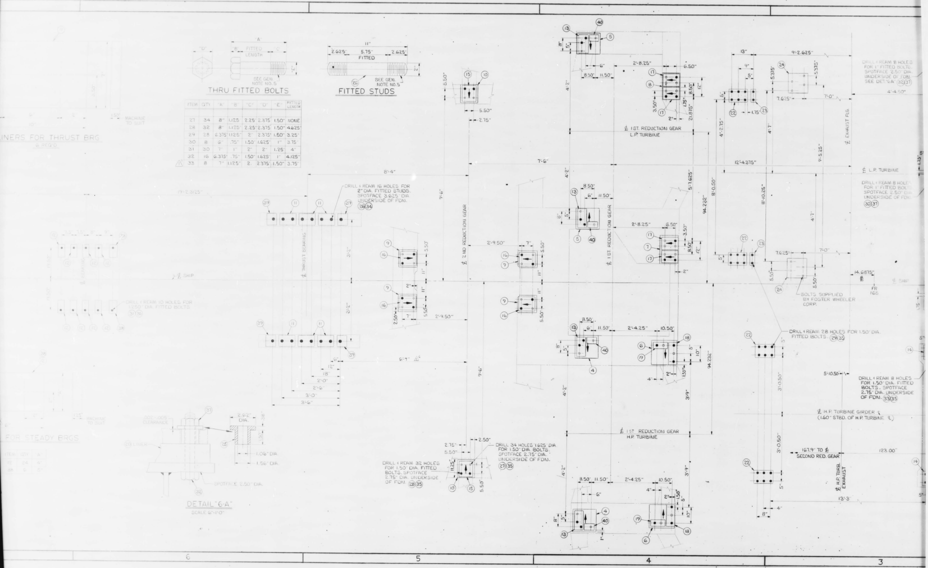
PLAN NO. M-4650-322-1 ALT. NO. 2

LINER BLOCKS FOR MAIN PROPULSION UNIT

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-27-77				
A.B.S.	☒				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

M-689


"A"
"B" FITTED LENGTH "C"
"D"
"E"
SEE GEN. NOTE NO. 5
11"
2.625" 5.75" 2.625"
FITTED
SEE GEN. NOTE NO. 5
FITTED STUDS
LINERS FOR THRUST BRG
8 REQ'D
MACHINE TO SUIT
19'-2.3125"
8'-4"
7'-6"
12'-4.875"
DRILL & REAM 16 HOLES FOR 2" DIA. FITTED STUDS. SPOTFACE 3.625" DIA. UNDERSIDE OF FDN. 26 34
DRILL & REAM 10 HOLES FOR 1.250" DIA. FITTED BOLTS. 31 36
℄ THRUST BEARING
℄ SHIP
℄ 2 ND REDUCTION GEAR
℄ 1 ST. REDUCTION GEAR
℄ 1 ST. REDUCTION GEAR L.P. TURBINE
℄ 1 ST. REDUCTION GEAR H.P. TURBINE
℄ EXHAUST FLG.
℄ L.P. TURBINE
DRILL & REAM 8 HOLES FOR 1" FITTED BOLTS. SPOTFACE 2.50" DIA. UNDERSIDE OF FDN. SEE DET "6A" 32 37
4'-4.50"
DRILL & REAM 8 HOLES FOR 1" FITTED BOLTS. SPOTFACE 2.50" DIA. UNDERSIDE OF FDN. 30 37
14.6875"
FR 165
BOLTS SUPPLIED BY FOSTER WHEELER CORP.
DRILL & REAM 28 HOLES FOR 1.50" DIA. FITTED BOLTS. 29 35
5'-10.50"
DRILL & REAM 8 HOLES FOR 1.50" DIA. FITTED BOLTS. SPOTFACE 2.75" DIA. UNDERSIDE OF FDN. 33 35
℄ H.P. TURBINE GIRDER ℄ (1.60" STBD. OF H.P. TURBINE ℄)
167.9" TO ℄ SECOND RED. GEAR
123.00"
℄ H.P. TURB. EXHAUST
13'-3"
DRILL & REAM 32 HOLES FOR 1.50" DIA. FITTED BOLTS. SPOTFACE 2.75" DIA. UNDERSIDE OF FDN. 28 35
DRILL 34 HOLES 1.625" DIA. FOR 1.50" DIA. BOLTS. SPOTFACE 2.75" DIA. UNDERSIDE OF FDN. 27 35
.002-.005 CLEARANCE
2.62" DIA.
1.06" DIA.
1.56" DIA.
SPOTFACE 2.50" DIA.
DETAIL "6-A"
SCALE 6"=1'-0"
LINERS FOR STEADY BRGS
6
5
4
3

THRU FITTED BOLTS

ITEM	QTY	"A"	"B"	"C"	"D"	"E"	FITTED LENGTH
27	34	8"	1.125"	2.25"	2.375	1.50"	NONE
28	32	8"	1.125"	2.25"	2.375	1.50"	4.625"
29	28	6.375"	1.125"	2"	2.375"	1.50"	3.25"
30	8	6"	.75"	1.50"	1.625"	1"	3.75"
31	30	7"	1"	2"	2"	1.25"	4"
32	16	6.375"	.75"	1.50"	1.625"	1"	4.125"
33	8	7"	1.125"	2.	2.375"	1.50"	3.75"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-322-1

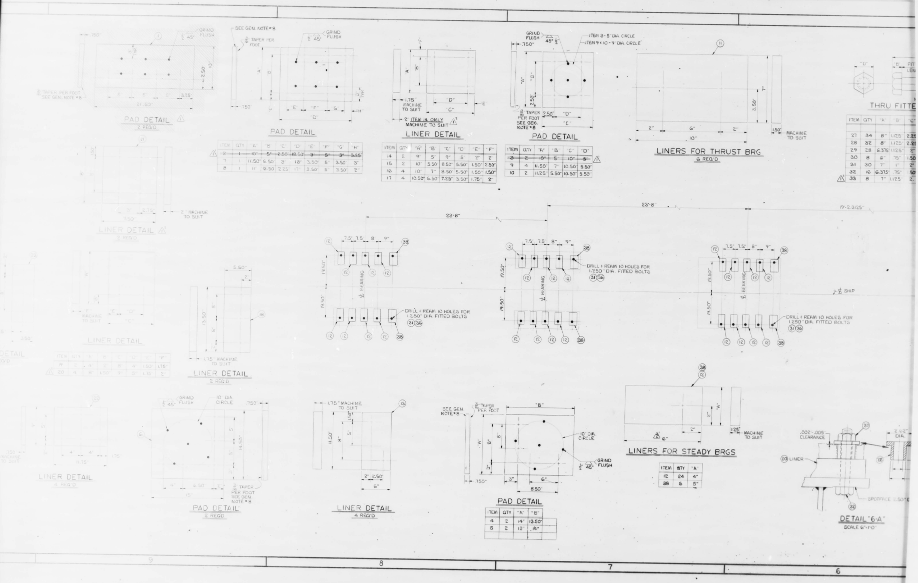
FRAME 2 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-322-1

FRAME 3 OF 4



SEE GEN. NOTE # 8
3/16" TAPER PER FOOT
1/2" 45° GRIND FLUSH
.750"
2.50"
10"
21.50"
3.25"
PAD DETAIL
2 REQ'D
"A"
"B"
"E"
"F"
"G"
"H"
"D"
PAD DETAIL
1.75" MACHINE TO SUIT
2" ITEM 14 ONLY MACHINE TO SUIT
"C"
LINER DETAIL
GRIND FLUSH
ITEM 3 - 5" DIA. CIRCLE
ITEM 9 & 10 - 9" DIA. CIRCLE
PAD DETAIL
11
2"
6"
10"
3.50"
7"
1.50" MACHINE TO SUIT
LINERS FOR THRUST BRG
6 REQ'D
THRU FITTE
19'-2.3125"
23'-8"
23'-8"
7.5" 7.5" 8" 9"
12
38
19.50"
℄ BEARING
DRILL & REAM 10 HOLES FOR 1.250" DIA. FITTED BOLTS
31 36
℄ SHIP
LINER DETAIL
2 REQ'D
LINER DETAIL
5.50"
13.50"
1.75" MACHINE TO SUIT
LINER DETAIL
2 REQ'D
10" DIA. CIRCLE
14.50"
15"
6.50"
PAD DETAIL
2 REQ'D
1.75" MACHINE TO SUIT
11.50"
8"
2" 2.50"
LINER DETAIL
4 REQ'D
13
"B"
10" DIA. CIRCLE
8.50"
1.25" MACHINE TO SUIT
LINERS FOR STEADY BRGS
.002-.005 CLEARANCE
20 LINER
37
32
SPOTFACE 2.50"
DETAIL "6-A"
SCALE 6"=1'-0"
9
8
7
6

PAD DETAIL

ITEM	QTY	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
~~2~~	~~1~~	~~10"~~	~~5"~~	~~2.50"~~	~~18.50"~~	~~3"~~	~~5"~~	~~3"~~	~~3.25"~~
7	1	11.50"	6.50	3"	18"	3.50"	5"	3.50"	3"
8	1	11"	6.50	2.25"	17"	3.50"	5"	3.50"	2"

LINER DETAIL

ITEM	QTY	"A"	"B"	"C"	"D"	"E"	"F"
14	2	9"	5"	9"	5"	2"	2"
15	2	10"	5.50"	8.50"	5.50"	1.50"	2.50"
16	4	10"	7"	8.50"	5.50"	1.50"	1.50"
17	4	10.50"	6.50	7.25"	3.50"	1.75"	2"

PAD DETAIL

ITEM	QTY	"A"	"B"	"C"	"D"
~~3~~	~~2~~	~~10"~~	~~5"~~	~~10"~~	~~5"~~
9	4	11.50"	7"	10.50"	5.50"
10	2	11.25"	5.50"	10.50"	5.50"

THRU FITTE

ITEM	QTY	"A"	"B"	"C"
27	34	8"	1.125"	2.25
28	32	8"	1.125"	2.25
29	28	6.375"	1.125"	2"
30	8	6"	.75"	1.50
31	30	7"	1"	2"
32	16	6.375"	.75"	1.50
33	8	7"	1.125"	2.

LINERS FOR STEADY BRGS

ITEM	QTY	"A"
12	24	4"
38	6	5"

PAD DETAIL

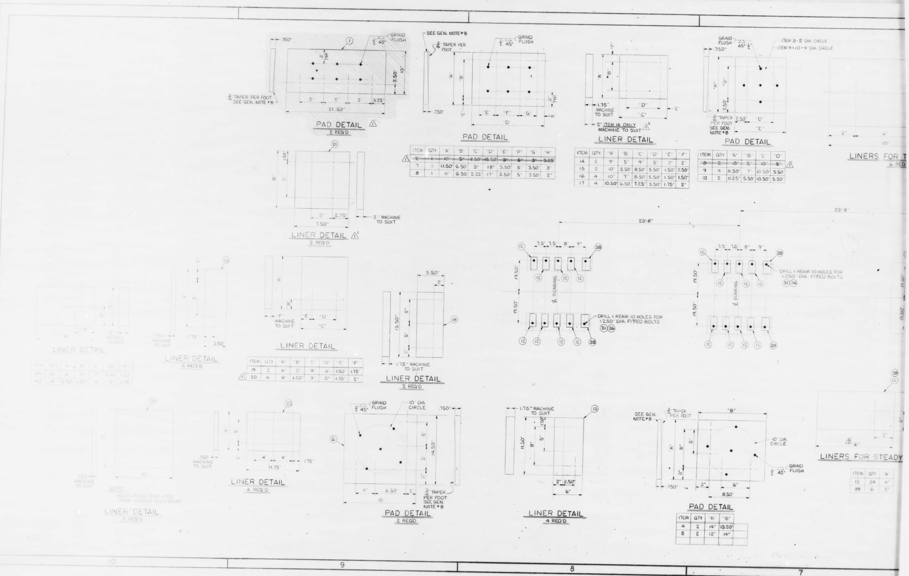
ITEM	QTY	"A"	"B"	
4	2	14"	13.50"	
5	2	13"	14"	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-322-1

FRAME 4 OF 4



PAD DETAIL
2 REQ'D
3/16" TAPER PER FOOT SEE GEN. NOTE #8
GRIND FLUSH
1/2 45°
.750"
21.50"
5" 5" 5" 3.25"
2.50"
10"
3" TYP
SEE GEN. NOTE #8
3/16" TAPER PER FOOT
PAD DETAIL
LINER DETAIL
1.75" MACHINE TO SUIT
2" ITEM 14 ONLY MACHINE TO SUIT
PAD DETAIL
ITEM 3 - 5" DIA CIRCLE
ITEM 9 & 10 - 9" DIA CIRCLE
LINERS FOR
6 REQ'D
LINER DETAIL
2 REQ'D
2" MACHINE TO SUIT
7.50"
3" 2.75"
23'-8"
7.5" 7.5" 8" 9"
19.50"
℄ BEARING
DRILL & REAM 10 HOLES FOR 1.250" DIA. FITTED BOLTS
LINER DETAIL
2 REQ'D
LINER DETAIL
"F" MACHINE TO SUIT
LINER DETAIL
5.50" 2"
13.50"
1.75" MACHINE TO SUIT
LINER DETAIL
2 REQ'D
LINER DETAIL
4 REQ'D
.750 MACHINE TO SUIT
11.75"
10" DIA CIRCLE
14.50"
15"
4" 6.50" 2"
PAD DETAIL
2 REQ'D
1.75" MACHINE TO SUIT
11.50"
2" 2.50"
6"
LINER DETAIL
4 REQ'D
SEE GEN. NOTE #8
3/16" TAPER PER FOOT
"B"
10" DIA CIRCLE
GRIND FLUSH
.750" 3" 6"
8.50"
PAD DETAIL
LINERS FOR STEADY
NOTE
HOLES TO BE TEMPLATED FROM VENDOR EQUIPMENT
LINER DETAIL
2 REQ'D
10
9
8
7

PAD DETAIL

ITEM	QTY	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
~~2~~	~~1~~	~~10"~~	~~5"~~	~~2.50"~~	~~18.50"~~	~~3"~~	~~5"~~	~~3"~~	~~3.25"~~
7	1	11.50"	6.50"	3"	18"	3.50"	5"	3.50"	3"
8	1	11"	6.50	2.25"	17"	3.50"	5"	3.50"	2"

LINER DETAIL

ITEM	QTY	"A"	"B"	"C"	"D"	"E"	"F"
14	2	9"	5"	9"	5"	2"	2"
15	2	10"	5.50"	8.50"	5.50"	1.50"	2.50"
16	4	10"	7"	8.50"	5.50"	1.50"	1.50"
17	4	10.50"	6.50"	7.25"	3.50"	1.75"	2"

PAD DETAIL

ITEM	QTY	"A"	"B"	"C"	"D"
~~3~~	~~2~~	~~10"~~	~~5"~~	~~10"~~	~~5"~~
9	4	11.50"	7"	10.50"	5.50"
10	2	11.25"	5.50"	10.50"	5.50"

LINER DETAIL

ITEM	QTY	"A"	"B"	"C"	"D"	"E"
39	4	6"	2"	7"	3.50"	1.50"
40	4	5.50"	1.50"	4"	2"	1.75"

LINER DETAIL

ITEM	QTY	"A"	"B"	"C"	"D"	"E"	"F"
19	2	4"	2"	8"	4"	1.50"	1.75"
20	4	8"	1.50"	9"	5"	1.75"	2"

PAD DETAIL

ITEM	QTY	"A"	"B"	
4	2	14"	13.50"	
5	2	13"	14"	

LINERS FOR STEADY

ITEM	QTY	"A"
12	24	4"
38	6	5"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-351-1

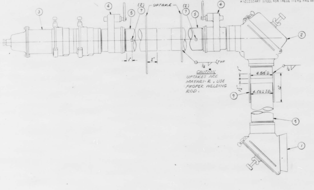
FRAME 1 OF 1

M-4650-351-1

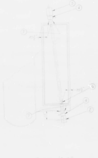
LIST OF MATERIAL

ALT.	ITEM	QTY.	DESCRIPTION	MAT'L.	SPEC.	ANSI	REMARKS	REQ'N.
	1	2	VISION UNIT - COMPLETE	—	—	—	R.H. WAGER DWG. 100A	500001
	2	2	REFLECTOR UNIT - COMPLETE	—	—	—	122-R0011	
	3	2	TRANSCEIVER UNIT - COMPLETE	—	—	—	122-D0010	
	4	4	DAMPER UNIT - COMPLETE	—	—	—	110A	
	5	80'	4" STD PIPE GALV.	STEEL	A-53 GR.B TYPE E	B36.10	SEE NOTE Nº 4 SEE NOTES 133, 90-95 REF. 4	500104-AT
	6	8	4" 150# SLIP ON FLANGE F.F.D.	FORGED STEEL	A105	B16.5	TUBE TURN PT #50 SEE NOTES 133, 90-95 REF. 4	500078-D
	7	8	3/8" PIPE COUPLINGS 3,000# SCRD.	FORGED STEEL	A234	B16.11	BONNEY FORGE SEE NOTES 133, 90-95 REF. 4	500078-E
	8	8	4" PIPE SUPPORTS TYPE "L" MK-1	STEEL	ABS GR.A		STD EF-521 L-10" GALV.	* UAO
	9	2	5" Ø SEAMLESS MECH TUBING 1/4" WALL	CARBON STEEL	A519 GR.1018 HOT FIN.		6" LONG GALV.	500104-AP
	10	2	7/16" SAFETY HOOK W/3/8" MISSING LINK	STEEL	—	—	T. LAUGHLIN PTO. G-3315 SAFETY HOOK (750 LBS) " " G-335 MISSING LINK	500116-D
	11	18"	5/16" LINK CHAIN GALV.	STEEL	—	—	CUT 2 PIECES TO SUIT	UAO

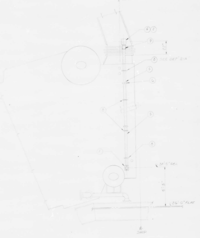
*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED



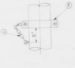
CAUTION
UPTAKES ARE MAYARI-R, USE PROPER WELDING ROD.



PLAN "3-B"
SCALE: 3/8" = 1'-0"



ELEVATION "3-A"
LOOKING AFT
SCALE: 3/8" = 1'-0"
STBD BOILER SHOWN
PORT BOILER OPPOSITE



DETAIL "2-A"
SCALE: 3" = 1'-0"

GENERAL NOTES

1. REFLECTOR UNIT, ITEM Nº 2 AND LIGHT BOX UNIT, ITEM Nº 3 MUST BE IN EXACT SIGHT ALIGNMENT.
2. PIPES IN UPTAKES SHALL BE INSTALLED BEFORE UPTAKES ARE INSULATED.
3. PIPES TO BE COATED PER REF Nº 3.

UAO-5070

NO.	PLAN NO.	TITLE
4	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MATERIALS
3	H-4650-161-1	PAINT SCHEDULE
2	37-2891-5-20	MAIN SECT. BOILER FOSTER WHEELER
1	M-4650-362-1	UPTAKES

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D

HULL	DESIGN	CHARGE
4651	"	8450
4650	27,340 DWT CONTAINER SHIP	8450

JOB NO. 351

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NOTED DATE 10-1-77
DRAWN DIMELLA APPROVED
TRACED APPROVED
CHECKED F.T.G. APPROVED HBW

PLAN NO. M-4650-351-1 ALT. NO. 0

ARRANGEMENT OF BOILER SMOKE INDICATORS

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-3-77				
A.B.S.	X				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

M-690

	DATE OF ISSUE
ALTERATION	0
ENGINEERING DISTRIBUTION	
OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S NAVY	
U.S.C.G.	
JOINER CONT'R.	
OWNER'S INSP.	1
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	1
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT - 21	1
MACH. DRAFT - 22	2
ELEC. DRAFT - 23	1
OUTFIT DRAFT - 25	
ESTIMATING	
PRODUCTION (SCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	7
YARD DISTRIBUTION	
UAO	1
PIECE RATE - 11	1
TEST DEPARTMENT	
Q-ASSURANCE	1
PLANNING	1
GROUND ASSEMBLY	2
35 DEPT	2
P. McNAIR	1
H. LEVY	1
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL - 40	
WET DOCK	
PIPE SHOP - 52	2
OUTFIT #1 PIER	1
PIPE DRAFT - 52	2
BOILER SHOP - 58	4
OUTSIDE MACH. - 60	1
Q-MAINT	1
ELECTRIC SHOP - 70	2
SHEET MET. SHOP - 74	
COPPER SHOP - 81	
PAINT SHOP - 75	1
WELDING	
MOLD LOFT - 41	1
BRACKET SHOP	
TOTAL YARD DIST.	26

4650-51 ALT. 0

2

3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-1

FRAME 1 OF 2

LIST OF PIPES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D BLK.	AMOUNT REQ'D GALV.	AMOUNT REQ'D TOTAL	SIZE	SCH NO.	WALL THK	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
			GE-1	6'-0		6'-0	2½"	40	.203	2"	950°	B 36.10	SEAMLESS STEEL CHR-MO STL.	A 335 GR P11	H.P. TURBINE GLAND EXHAUST	I	SERVICE	NOTES 128 & 136
			GE-2	25'-0		25'-0	4"	40	.237		770°			A 106 GR B	GLAND EXHAUST			NOTES 128, 135 & 136
			GE-3	10'-0		10'-0	3½"	40	.226		950		CHR-MOLY STL.	A 335 GR P11				
			GE-4	35'-0		25'-0	3"	40	.216		↓		↓	↓				
			GE-5	2'-0		2'-0	2½"	40	.203		770			A 106 GR B				135
			GE-6	50'-0		50'-0	2"	40	.154		950		CHR. MOLY STL.	A 335 GR P11				
			GE-7	80'-0		60'-0	1½"	40	.145		770			A 106 GR B				135
			GE-8	75'-0		75'-0	1¼"	40	.140									
			GE-9	62'-0		62'-0	1"	40	.133		↓			↓				↓
			GE-10	10'-0		10'-0	¾"	40	.113		950		CHR. MOLY STL.	A 335 GR P11				
			GE-11	26'-0		26'-0	½"	40	.109		770			A 106 GR B				135
			GE-12	20'-0		20'-0	4"	40	.237		950		CHR. MOLY STL.	A 335 GR P11				
			GE-13	10'-0		10'-0	1"	40	.133	↓	↓	↓	↓	↓	↓	↓	↓	↓
			GS-1	3'-0		3'-0	5"	40	.258	2"	770°	B 36.10	SEAMLESS STEEL	A 106 GR B	GLAND SUPPLY	I	SERVICE	NOTES 128, 135 & 136
			GS-2	12'-0		12'-0	3½"	40	.226									
			GS-3	30'-0		30'-0	3"	40	.216									
			GS-4	11'-0		11'-0	2½"	40	.203									
			GS-5	12'-0		12'-0	1¼"	40	.140									
			GS-6	3'-0		3'-0	1"	40	.133									
			GS-7	10'-0		10'-0	½"	40	.109	↓	↓	↓	↓	↓	↓	↓	↓	↓

LIST OF VALVES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD	ANSI DIM STD	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. SEE NOTE NO. 4
			GS-100	2	1"	2"	770°	600#	B16.10	FORGED STEEL	A 105	STAIN STL	STAIN STL	STAIN STL		FLGD. FCD	16.5	GLOBE	NOTES 4,5, 90-93	EDWARDS FIG. 828
			GS-101	1	1"			600#		↓	↓							ANGLE	4,5, 90-93	EDWARDS FIG. 829
			GS-102	1	2½"			150#		CAST	A216 GR WCB							GLOBE	2,6, 90-93	POWELL FIG. 1531 FE
			GS-103	2	2½"			150#		↓	↓					↓	↓	ANGLE	2,6, 90-93	POWELL FIG. 1533 FE
			GS-104	1	½"			600#	↓	FORGED ↓	A 105	↓	↓	↓		SOCKET WELD	—	GLOBE	↓ 4,5,69, 90-93	EDWARDS FIG. 848Y
			GS-105	1	1"			300#	—	—	—	—	—	—		FLGD FCD	—	CONTROL	SUPPLIED BY VENDOR	LESLIE #10/1.4.3.1
			GS-106	1	2½"			150#	—	—	—	—	—	—		—	—	↓		↓ #10/3.4.1.4
			GS-107	1	—			—	—	—	—	—	—	—		—	—	PILOT		—
			GS-108	1	—			—	—	—	—	—	—	—		—	—	↓		—
			GS-109	2	—			—	—	—	—	—	—	—		—	—	PRESURE REDUCING, AIR	↓	—
			GS-110	1	1"	↓	↓	600#	B16.10	FORGED STEEL	A105	STAIN. STL.	STAIN. STL.	STAIN. STL.		FLGD. FCD	B16.5	GLOBE FLOCONTROL VALVE WITH 4V PORT	NOTES 4,5, 90-93	HANCOCK FIG. NO. 5505F
			GE-100	2	1½"	2"	770°	150#	—	FORGED STEEL	A-105	STAIN STL	STAIN STL	STAIN STL		FLGD FCD	16.5	GLOBE	NOTES 4,6, 90-93	LUNKENHEIMER FIG. 1170-W (MOD.)
			GE-101	1	4"			600#	B16.10	CAST CH. MOLY STL.	A217 GR WC6								NOTES 2,4,6, 90-93	EDWARDS FIG. #318
			GE-102	3	1½"			150	—	FORGED STEEL	A-105								NOTES 4,6, 90-93	LUNKENHEIMER FIG. 1170-W (MOD.)
			GE-103	1	½"				—											
			GE-104	1	1"	↓	↓	↓	—	↓	↓	↓	↓	↓		↓	↓	↓	↓	↓

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4-8-77		1. ADDED PIPE NOS. GE-12 & GE-13 AND VALVE NO. GS-110 2. INC. THE QTY. OF GE-1 FROM 4'-0" TO 6'-0" & GS-7 FROM 4'-0" TO 10'-0" 3. INC. THE QTY. OF GE-4 FROM 22-0 TO 25-0 AND REVISED MATERIAL FROM SMLS. STL. TO SMLS. CHR-MOLY & NOTES TO SUIT 4. REVISED MATERIAL OF GE-3, GE-6, & GE-10 FROM SMLS. STL. TO CHROME MOLY. 5. REVISED GE-101 IN ITS ENTIRETY	G.L.W.	G. G. SHARP LTR. DATED 5-11-77
2	10-5-78		1. ADDED REQ NO. TO ITEMS: GS-105 THRU GS-109 2. REVISE QTY OF ITEMS: GE-4 FROM 25'-0" TO 35'-0" GE-7 ↓ 60'-0" TO 80'	L.P.K.	11/28/78

HULL	DESIGN	CHARGE
4651	↓	↓
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE —
DATE 10-25-76
DRAWN W.F.
APPROVED
TRACED
APPROVED
CHECKED J.E.W.
APPROVED

PLAN NO. M4650-371-1 ALT. NO. 2

PIPE & VALVE LIST
FOR
GLAND SEALING AND
EXHAUST SYSTEM

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	9-16-77				
U.S.C.G.	✗				
LLOYD'S R.S.	✗				
U.S.P.H.S.	✗				

M-693

		DATE OF ISSUE	
	ALTERATION		
	ENGINEERING DISTRIBUTION		
MAIL	OWNERS		
	AMERICAN BUREAU		
	LLOYD'S R.S.		
	U.S.M.A.		
	U.S. NAVY		
	U.S.C.G.		
	JOINER CONT'R.		
INSPECTION	OWNER'S INSP.		
	AM. BU. INSP.		
	LLOYD'S INSP.		
	U.S.M.A. INSP.		
	U.S. NAVY INSP.		
	U.S.C.G. INSP.		
OFFICE	HULL DRAFT - 21		
	MACH. DRAFT - 22		
	ELEC. DRAFT - 23		
	OUTFIT DRAFT - 25		
	ESTIMATING		
MISC.	J. DOUGHERTY (CYD)		
	PRODUCTION (SCD)		
	ORDER DEPT.		
	JOINER CONT. YARD		
	TOTAL ENG'R. DIST.		
	YARD DISTRIBUTION		
YARD	J. SIMMONS		
	PIECE RATE - 11		
	TEST DEPARTMENT		
	STEEL PLANNING		
STRUCTURAL	GROUND ASSEMBLY	2	2
	F. McNAIR		
	NO. WAY		
	NO. WAY		
	NO. WAY		
	NO. WAY		
	STRUCT. SUPER.	2	2
	OPTICAL DETAIL-45	2	2
	WET DOCK		
MACH'Y & OUTFIT.	PIPE SHOP - 52		
	OUTFIT. #1 PIER	2	2
	PIPE DRAFT. - 52		
	BOILER SHOP - 56	1	1
	OUTSIDE MACH. - 60	1	1
	ELECTRIC SHOP - 70		
	SHEETMET. SHOP - 74		
	COPPER SHOP - 51		
	PAINT SHOP - 75	1	1
OTHER	WELDING		
	MOLD LOFT - 41	1	1
	BRACKET SHOP		
	TOTAL YARD DIST.		

M4650-371-1

GLAND SEALING & EXHAU
PIPE & VALVE LIST ECM

LIST OF PIPES

STRUCTURAL MODULAR UNIT APPLICATION UNIT #2	UNIT #7	UNIT #15	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	GALV.	TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	°F	ANSI DIM. STD.	DESCRIPTION	ASTM SPEC.	SE
		6'-0"	506944				1	GE-1	6'-0		6'-0	2½"	40	.203	2"	450°	B 36.10	SEAMLESS STEEL CHR-MO STL	A 335 GR P11	H.P. TURBINE GLAND E
								GE-2	25'-0		25'-0	4"	40	.237		770°			A 106 GR B	GLAND EXHAUST
		5'-0"	-A				1	GE-3	10'-0		10'-0	3½"	40	.226		950		CHR-MOLY STL.	A 335 GR P11	
		35'-0"	-A	506944-D			1,2	GE-4	35'-0		25'-0	3"	40	.216						
								GE-5	2'-0		2'-0	2½"	40	.203		770			A 106 GR B	
		10'-0"	-A				1	GE-6	50'-0		50'-0	2"	40	.154		950		CHR. MOLY STL.	A 335 GR P11	
20'-0"	60'			506944-D			2	GE-7	80'-0		60'-0	1½"	40	.145		770			A106 GR B	
		45'-0"						GE-8	75'-0		75'-0	1¼"	40	.140						
								GE-9	62'-0		62'-0	1"	40	.133						
		10'-0"	-A				1	GE-10	10'-0		10'-0	¾"	40	.113		950		CHR. MOLY STL.	A 335 GR P11	
	12'							GE-11	26'-0		26'-0	½"	40	.109		770			A 106 GR B	
		12'-0"	506944-A				1	GE-12	20'-0"		20'-0"	4"	40	.237		950		CHR. MOLY STL.	A 335 GR P11	
		20'-0"	506944-A				1	GE-13	20'-0"		20'-0"	1"	40	.133						
		2'-0"	506944					GS-1	3'-0		3'-0	5"	40	.258	2"	770°	B 36.10	SEAMLESS STEEL	A 106 GR B	GLAND SUPPLY
		12'-0"						GS-2	12'-0		12'-0	3½"	40	.226						
		28'-0"						GS-3	30'-0		30'-0	8"	40	.216						
		11'-0"						GS-4	41'-0		11'-0	2½	40	.203						
								GS-5	12'-0		12'-0	1¼"	40	.140						
		3'-0"						GS-6	3'-0		3'-0	1"	40	.133						
		20'-0"		506944-A			1	GS-7	20'-0		20'-0	½"	40	.109						

PIPING PACKAGE UNIT APPLICATION

UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

LIST OF VALVES

STRUCTURAL MODULAR UNIT APPLICATION UNIT #15	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	°F	PRESS STD	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	DISC	STEM	PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	
1	506900					GS-100	2	1"	2"	770°	600#	B16.10	FORGED STEEL	A 105	STAIN STL	STAIN STL	STAIN STL		FLGD FLD	16.5	GLOB
1						GS-101	1	1"			600#										ANGLE
1						GS-102	1	2½"			150#		CAST	A216 GR WCB							GLOB
2						GS-103	2	2½"			150#										ANGLE
1						GS-104	1	½"			600#		FORGED	A 105					SOCKET WELD	—	GLOB
1	500002	—	—		2	GS-105	1	1"			300#	—	—	—	—	—	—		FLGD FLD		CONT
1		—	—		2	GS-106	1	2½"			150#	—	—	—	—	—	—		—	—	
		—	—		2	GS-107	1	—			—	—	—	—	—	—	—		—	—	PILOT
		—	—		2	GS-108	1	—			—	—	—	—	—	—	—		—	—	
		—	—		2	GS-109	2	—			—	—	—	—	—	—	—		—	—	PRESSU
	506900-A				1	GS-110	1	1"			600#	B16.10	FORGED STEEL	A105	STAIN STL	STAIN STL	STAIN STL		FLGD FLD		GLOBE FL
	506900					GE-100	2	1½"	2"	770°	150#	—	FORGED STEEL	A-105	STAIN STL	STAIN STL	STAIN STL		FLGD FLD	16.5	GLOB
1	506900-A				1	GE-101	1	4"			300#	B16.10	CAST CHR. MOLY STL	A217 GR WC6							
	506900					GE-102	3	1½			150	—	FORGED STEEL	A-105							
						GE-103	1	½"				—									
						GE-104	1	1"				—									

PIPING PACKAGE UNIT APPLICATION

UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

EF-529
PLAN NO.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-1

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-2

FRAME 1 OF 2

LIST OF FLANGES

REQUISITION NO.	ALT NO.	FLANGE IDENT NO.	AMT. REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD.	MATERIAL	ASTM SPEC	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
		GE-200	1	5"	2	770°		150#	B16.5	STL FORGED	A105	FLANGE-WELD NECK-BORE FOR SCH 40 PIPE	GLAND EXHAUST		NOTES 90-96	TUBE TURN PT NO. 30
		GE-201	2	4"												30
		GE-202	1	3½"						FGD CHR MOLY	A182 GR F11					30
		GE-203	10	3"												30
		GE-204	3	2½"						FGD CHR MOLY	A182 GR F11					30
		GE-205	4	2"								FLANGE-SOCKET WELD-BORE FOR SCH 80 PIPE				150
		GE-206	7	1½"						FGD STEEL	A105					150
		GE-207	4	1¼"												150
		GE-208	7	1"												150
		GE-209	1	¾"				300#								151
		GE-210	4	½"				150#								150
		GE-211	4	½"				1500#		FGD CHR MOLY	A182 GR F11					1558
		GE-212	4	2½"		950°		150#		FGD CHR-MO	A182 GR F11	FLANGE-WELD NECK - BORE FOR SCH 40 PIPE				30
		GE-213		4"												30
		GE-214		1"								- SOCKET WELD				150
		GE-215		¾"				300#				- WELD NECK				31
		GS-200		3½"	2	770°		150#	B16.5	STL FORGED	A105	FLANGE-WELD NECK USE WITH SCH 40 PIPE	GLAND SEALING		NOTES 90-93	TUBE TURN PT NO. 30
		GS-201		2½"												30
		GS-202	4	3½"								FLANGE-SOCKET WELD-BORE FOR STD PIPE				150
		GS-203	11	3"	2	770		150#	B16.5	STL FORGED	A105	FLANGE-WELD NECK-BORE FOR SCH 40 PIPE				TUBE TURN PT. NO 30
		GS-204	5	2½"												
		GS-205	6	1½"	2	770		150#	B16.5	STL FORGED	A105	FLANGE SOCK WELD BORE FOR SCH 40 PIPE				TUBE TURN PT NO.150
		GS-206	16	½"												
		GS-207	1	[illegible]												

LIST OF GASKETS

REQUISITION NO.	ALT NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM. STD	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
		GE-300														FLEXITALLIC STYLE CG
		GE-301	2	2½"	2	950°		150#		STL STNS	COMM'L	GASKET SPIRAL WOUND	GLAND EXHAUST			
		GE-302	1	5"		770°										
		GE-303	2	4"												
		GE-304	1	3½"												
		GE-305	7	3"												
		GE-306	3	2½"												
		GE-307	3	2"												
		GE-308	5	1½"												
		GE-309	2	1¼"												
		GE-310	5	1"												
		GE-311	1	¾"				300#								
		GE-312	2	½"				150#								
		GE-313	3	¼"												
		GE-314	1	4"				300#								
		GS-300	3	3½"	2	770°		150#		STL STNS	COMM'L	GASKET SPIRAL WOUND	GLAND SEALING			FLEXITALLIC STYLE CG
		GS-301	7	3"												
		GS-302	10	2½"												
		GS-303	7	1"												
		GS-304	3	½"												
		GS-305														

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.	ALT NO.	BOLTING IDENT NO.	AMT REQ'D	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	NUTS (2) FOR EACH STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	SERVICE	CODE NO.	REMARKS
		GE-400	8	A193 GR B7	½"	2¼"		A194 GR 2H	½"	B18.2	2	770°								FOR ½" FLG		
		GE-401	28	A193 GR B16	½"	2½"		A194 GR 3	½"			950°								FOR 1" & 1¼" FLG		
		GE-402	20	A193 GR B7	½"	2¾"		A194 GR 2H	½"			770°								FOR 1½" FLG		
		GE-403	4		⅝"	2¾"			⅝"											FOR ¾"-300# FLG		
		GE-404	12	A193 GR B16	⅝"	3"		A194 GR 3	⅝"			950°								FOR 2" FLG		
		GE-405	12	A193 GR B7	⅝"	3¼"		A194 GR 2H	⅝"			770°								FOR 2½" FLG		
		GE-406	42	A193 GR B16	⅝"	3½"		A194 GR 3	⅝"			950°								FOR 3", 3½" & 4" FLG		
		GE-407	8	A193 GR B7	¾"	3¾"		A194 GR 2H	¾"			770°								FOR 5" FLG		
		GE-408	12	A193 GR B16	¾"	4"		A194 GR 3	¾"			950°								FOR ¾ 300# FLG		
		GE-409	8	A193 GR B16	⅝"	3¼"		A194 GR 3	⅝"			950°								FOR 2½" FLG-950°		
		GE-410			¾"				¾"											FOR 4" 300# FLG		
		GS-400	36	A193 GR B7	½"	2¼"		A194 GR 2H	½"	B18.2	2	770°								FOR ½" FLG		
		GS-401	28		½"	2½"			½"											FOR 1" FLG		
		GS-402	40		⅝"	3¼"			⅝"											FOR 2½" FLG		
		GS-403	52		⅝"	3½"			⅝"											FOR 3" & 3½" FLG		
		GS-404	8		⅝"	3"			⅝"											FOR 2" FLG		

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4-19-77		FLANGE LIST: 1. ADDED GE-213, GE-214, GE-215 2. DELETED GS-202, GS-204 3. REVISED GS-207 FROM 2" FLG TO 6"OD x ½ REDUCING FLANGE 4. REVISED GS-203 FROM SOCKET WELD TO WELD NECK. 5. REVISED GE-202, GE-204, GE-205 & GE-211 FROM FGD STEEL TO CHR MOLY STEEL. 6. INC. THE QTY OF THE FOLLOWING: GE-211 (1-4), GE-212 (2-4), GS-200 (1-5), GS-201 (4-7), AND GS-206 (7-15). GASKET LIST: 7. ADDED GE-314 & GS-305 8. INCR. GE-313 FROM 1 TO 3 AND GS-304 FROM 3 TO 9. STUD NUT & BOLT LIST: 9. ADDED GS-404 & GE-410 10. REVISED MATERIAL OF STUDS FROM A194 SYM 7 TO A194 SYM B16 AND NUTS FROM A194 SYM 2H TO A194 SYM 3 FOR GE-401, GE-404, GE-406, GE-408 & GE-409. 11. INC. THE QTY OF GE-408 FROM 4 TO 12 AND GS-400 FROM 12 TO 36.	G.L.W.	G.G. SHARP LTR DATED 5-19-77
2	9-28-77		1. FOR FLANGE GE-203, REVISED MAT'L FROM FGD ST'L TO FGD CHR MOLY	P.C.D.	

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8430

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ~~ DATE 10-27-76
DRAWN GWF APPROVED
TRACED APPROVED
CHECKED [illegible] APPROVED

PLAN NO. M 4650-371-2 ALT. NO. 2

FLANGE, GASKET, STUD,
BOLT & NUT LIST FOR
GLAND SEALING AND
EXHAUST SYSTEM

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

M-694

DATE OF ISSUE
ALTERATION
ENGINEERING DISTRIBUTION
MAIL: OWNERS, AMERICAN BUREAU, LLOYD'S R.S., U.S.M.A., U.S NAVY, U.S.C.G., JOINER CONT'R.
INSPECTION: OWNER'S INSP., AM. BU. INSP., LLOYD'S INSP., U.S.M.A. INSP., U.S. NAVY INSP., U.S.C.G. INSP.
OFFICE: HULL DRAFT.-21, MACH. DRAFT.-22, ELEC. DRAFT.-23, OUTFIT. DRAFT.-25, ESTIMATING, J. DOUGHERTY (CTD)
MISC.: PRODUCTION (BCD), ORDER DEPT., JOINER CONT. YARD
TOTAL ENG'R. DIST.
YARD DISTRIBUTION
YARD: PIECE RATE-11, TEST DEPARTMENT, STEEL PLANNING
STRUCTURAL: GROUND ASSEMBLY, NO. WAY, NO. WAY, NO. WAY, NO. WAY, STRUCT. SUPER., OPTICAL DETAIL-45, WET DOCK
MACH'Y & OUTFIT.: PIPE SHOP-52, OUTFIT. #1 PIER, PIPE DRAFT-52, BOILER SHOP-58, OUTSIDE MACH.-60, ELECTRIC SHOP-70, SHEET MET. SHOP-74, COPPER SHOP-51, PAINT SHOP-78, WELDING
OTHER: MOLD LOFT-41, BRACKET SHOP
TOTAL YARD DIST.
SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-2

FRAME 2 OF 2

EF-529
PLAN NO.

PIPING PACKAGE UNIT APPLICATION
UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FLANGES

STRUCTURAL MODULAR UNIT #15	REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SE
	506901				GE-200	1	5"	2	770°		150#	B16.5	STL FORGED	A105	FLANGE-WELD NECK-BORE FOR SCH 40 PIPE	GLAND EXHAUST
					GE-201	2	4"									
1	506901-A			1	GE-202	1	3½"						FGD. CHR. MOLY	A182 GR F11		
7	506901-B			2	GE-203	10	3"									
	506901-H			1	GE-204	3	2½"						FGD. CHR. MOLY	A182 GR F11		
3				1	GE-205	4	2"								FLANGE-SOCKET WELD-BORE FOR SCH 40 PIPE	
	506901				GE-206	7	1½"						FGD. STEEL	A-105		
4					GE-207	4	1¼"									
					GE-208	7	1"									
					GE-209	1	¾"				300#					
					GE-210	4	½"				150#					
4	506901-A			1	GE-211	4	¾"				1500#		FGD. CHR. MOLY	A182 GR F11		
4	506901	506901-H		1	GE-212	4	2½"		950°		150#		STL FGD CHR-MO	A182 GR F11	FLANGE-WELD NECK - BORE FOR SCH 40 PIPE	
2	506901-A			1	GE-213	2	4"									
7				1	GE-214	7	1"								- SOCKET WELD	
1				1	GE-215	2	4"				300#				- WELD NECK	
5	506901			1	GS-200	5	3½"	2	770°		150#	B16.5	STL FORGED	A105	FLANGE-WELD NECK-USE WITH SCH 40 PIPE	GLAND SEALING
7				1	GS-201	7	2½"								FLANGE-SOCKET WELD-BORE FOR STD PIPE	
				1	GS-202	4	3½"								FLANGE-WELD NECK-BORE FOR SCH 40 PIPE	
9	506901			1	GS-203	11	3"	2	770		150#	B16.5	STL FORGED	A105		
				1	GS-204	5	2½"									
5	506901			1	GS-205	5	1"	2	770		150#	B16.5	STL FORGED	A-105	FLANGE SOCK WELD BORE FOR SCH 40 PIPE	
15	506901	506901-A		1	GS-206	15	½"									
1	506901-A			1	GS-207	1	6 O.D.×E									

LIST OF GASKETS

STRUCTURAL MODULAR UNIT #15	REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
	506924				GE-300											
					GE-301	2	2½"	2	950°		150#	—	STL STNS	COMM'L	GASKET SPIRAL WOUND	GLAND EXHAUST
					GE-302	1	5"		770°			—				
1					GE-303	2	4"					—				
1					GE-304	1	3½"					—				
4					GE-305	7	3"					—				
2					GE-306	3	2½"					—				
2					GE-307	3	2"					—				
					GE-308	5	1½"					—				
1					GE-309	3	1¼"					—				
4					GE-310	5	1"					—				
	SUPPLY				GE-311	1	¾"				300#	—				
	506924				GE-312	2	½"				150#	—				
3		506924-B		1	GE-313	3	¾"				1500#	—				
	506924-H			1	GE-314	2	4"				300#	—				
3	506924				GS-300	3	3½"	2	770°		150#	—	STL STNS	COMM'L	GASKET-SPIRAL WOUND	GLAND SEALING
2					GS-301	7	3"					—				
7					GS-302	10	2½"					—				
7					GS-303	7	1"					—				
9		506924-A		1	GS-304	9	½"					—				
1	506924-A			1	GS-305	1	2"									

LIST OF STUDS, BOLTS & NUTS

STRUCTURAL MODULAR UNIT #15	REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD.	NUTS SEMI-FINISHED (2) FOR EACH STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD.
	506929				GE-400	8	A193 SYM B7	½"	2¼"	B18.2.1 BLT UNC-2A	A194 SYM 2H	½"	B18.2.2 UNC-2B	2	770°							
24	506929-C				GE-401	32	A193 SYM B16	½"	2½"		A194 SYM 3	½"			950°							
	506929				GE-402	20	A193 SYM B7	½"	2¾"		A194 SYM 2H	½"			770°							
					GE-403	4		⅝"	2¾"			⅝"										
8					GE-404	12	A193 SYM B16	⅝"	3"		A194 SYM 3	⅝"			950°							
		506929-A			GE-405	12	A193 SYM B7	⅝"	3¼"		A194 SYM 2H	⅝"			770°							
32	506929-C				GE-406	42	A193 SYM B16	⅝"	3½"		A194 SYM 3	⅝"			950°							
	506929				GE-407	8	A193 SYM B7	¾"	3¾"		A194 SYM 2H	¾"			770°							
12	506929-C				GE-408	12	A193 SYM B16	¾"	4"		A194 SYM 3	¾"			950°							
8	STUDS 506929 NUTS 506929-A				GE-409	8	A193 SYM B16	⅝"	3¼"		A194 SYM 3	⅝"			950°							
8	506929-C				GE-410	16		¾"	4¼"			¾"										
36	506929	506929-C			GS-400	36	A193 SYM B7	½"	2¼"	B18.2.1 BLT UNC-2A	A194 SYM 2-H	½"	B18.2.2 UNC-2B	2	770°							
28					GS-401	28		½"	2½"			½"										
28					GS-402	40		⅝"	3¼"			⅝"										
48					GS-403	52		⅝"	3½"			⅝"										
8	506929-Nuts 506929-C				GS-404	8		¾"	2¾"			¾"										

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-3

FRAME 1 OF 2

LIST OF FITTINGS

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
					GE-500	2	2½"	2	950°	40	.203	B16.9	CHR MO STL	A234 GR WP11	ELBOW-90° B.W.-L.R.	GLAND EXHAUST	NOS 90-93	TUBE TURN PART #1
					GE-501	1	3"				.216				TEE B.W.			#20
					GE-502	2	4"		770		.237		STEEL-SMLS	A234 GR WPB	ELBOW-90° B.W.-L.R.			#1
					GE-503	2	3"		950		.216		CHR-MO-STL	A234 GR WP11				#1
					GE-504	4	2½"		770		.203		STEEL-SMLS	A234 GR WPB				#1
					GE-505	1	5×4				.258×.237				ELBOW REDUCING 90° B.W.			#18
					GE-506	1	3×3×2½		950		.216×.203		CHR. MOLY STL	A234 GR WP11	TEE REDUCING B.W.			#22
					GE-507	1	4×4×3½				.237×.226				TEE REDUCING B.W.			#28
					GE-508	1	3½×2"				.226×.154				REDUCER CONCENTRIC B.W.			#90
					GE-509	6	2"			3000#	—	B16.11		A182 GR F11	ELBOW-90° S.W.		90-93	BONNEY FORGE
					GE-510	1	1½"		770		—		FORGED STEEL	A-105				
					GE-511	2	1¼"				—							
					GE-512	5	1"				—							
					GE-513	2	¾"		950		—		CHR. MOLY STL	A182 GR F11				
					GE-514	1	1¼"		770		—		FORGED STEEL	A-105	TEE S.W.			
					GE-515	2	1"				—							
					GE-516	2	1×1×¾		950		—		CHR. MOLY STL	A182 GR F11	TEE REDUCING S.W.			
					GE-517	1	2×1½		770		—		FORGED STEEL	A105	REDUCING INSERT			
					GE-518	1	1×¾				—							
					GE-519	1	4-3½-1½				—	—			SOCKOLET IPS RUN & OUTLET		171, 90-93	
					GE-520	1	1¼"			—	—	—			SOCKET WELDING BOSS			EF-358 FIG. 6
					GE-521	5	1"		950	—	—	—	FGD CHR MOLY STL	A182 GR F11				EF-488
					GE-522	2	½"		770	—	—	—	FORGED STEEL	A-105				EF-358
					GE-523	2	1¼"			40	.140	—	SMLS CARBON STL	A106 GR B	NIPPLE-4¾" LG BLK-THD ONE END			
					GE-524	4	1¼"			—	—	—	STEEL	—	FUNNEL			EF-355-MK #10
					GE-525	4	2½"		950°	40	—	—	CHR. MOLY	A335 GR P11	CHILL RING FOR 2½" PIPE			EF 488 TYPE "B"
					[illegible]	[illegible]	4"								4"			
					[illegible]	[illegible]	3½"								3½"			
					[illegible]	[illegible]	3"								3"			
					[illegible]	[illegible]	[illegible]			40	[illegible]	B16.9	SMLS CHR MOLY STL	A234 GR WP11	90° REDUCING ELBOW-B.W.-L.R.		NOS 90-93	TUBE TURN PT #V-R
					[illegible]	[illegible]	[illegible]			3000#	—	B16.11	FGD CHR MOLY STL	A182 GR F11	90° ELBOW-S.W.			BONNEY FORGE
					[illegible]	[illegible]	[illegible]				—				45° ELBOW-S.W.			
					[illegible]	[illegible]	[illegible]			40	—		CHR. MOLY	A335 GR P11	CHILL RING FOR 2½" PIPE			EF-488 TYPE A
					[illegible]	[illegible]	4"								4"			
					[illegible]	[illegible]	3½"								3½"			
					[illegible]	[illegible]	3"								3"			
				3	GE-536	4	¾"		770°	3000#	—	B16.11	FORGED STL	A105	ELBOW 90° S.W.	MAIN FEED PUMPS	NOS 90-93	BONNEY FORGE
				3	GE-537	2	¾"				—				45°			
				3	GE-538	2	1½×¾				—				REDUCER INSERT S.W.			
				3	GE-539	2	1½×¾				—				REDUCING COUPLING S.W.			
				3	GE-540	2	1½×1¼				—				REDUCER INSERT S.W.			
				3	GE-541	2	¾"			80	.126	—	SMLS. CARBON STL	A106 GR B	NIPPLE-6" LG BLK-THRD ONE END			
				3	GE-542	2	¾"			3000#	—	B16.11	FORGED STL	A105	UNION-SOCKET WELD [illegible]		NOS 90-93	BONNEY FORGE
				3	GE-543	2	1½"			3000#	—				TEE-SOCKET WELD			
				3	GE-544	2	1½"	—	—				STEEL	[illegible]	PIPE SLEEVE "FIG. 2"			BETH STD EF-496
				4	GE-545	1	3½"			SCH 40	.226	B16.9	CHR MOLY	A335 GR WP11	ELBOW 90° BUTT WELD			TUBETURN PT. NO. 1
				4	GE-546	1	3½"			SCH 40	—	—			CHILL RING TYBE "B"			BETH STD EF-488
					GS-500	5	3½"	2	770°	40	.226	B16.9	STEEL SMLS	A234 GR WPB	ELBOW-90° B.W. L.R.		NOS 90-93	TUBE TURN NO 1
					GS-501	5	3"				.216							1
					GS-502	1	2½"				.203							1
					GS-503	1	3½"				.226				45° B.W.			5
					GS-504	1	3"				.216							5
					GS-505	1	3½×3				.226×.216				REDUCER CONCENTRIC B.W.			90
					GS-506	1	5×3				.258×.216				ECCENTRIC B.W.			92
					GS-507	1	5×3½				.258×.226							92
					GS-508	1	3½"				.226				TEE B.W.			20
					GS-509	1	3"				.216							20
					GS-510	1	2½"				.203							20
					GS-511	1	1"			3000#	—	B16.11	FORGED STEEL	A-105	ELBOW 90° SOCKET WELD		90-93	BONNEY FORGE
					GS-512	1	1"				—				TEE SOCKET WELD			
					GS-513	2	½"				—							
					GS-514	1	1"			—	—	—	—	—	STRAINER		VENDOR FURNISHED	WESTINGHOUSE
					GS-515	1	¾"			—	—	—	FORGED STEEL	A-105	SOCK. WELD BOSS			EF 358 FIG #6
					GS-516	1	1×1×1			3000#	—	B16.11	FORGED STEEL	A-105	TEE SOCK. WELD		NOS 90-93	BONNEY FORGE
					GS-517	1	1"			300#	—	—	STAIN. STEEL	A181 316	ORIFICE PLATE FOR 1" PIPE, ½ DIA, TYPE "K", ⅛ THK			BETH STD BS-2-UF
					GS-518	1	1×½			3000#	—	B16.11	FORGED STEEL	A-105	REDUCING COUPLING S.W.		NOS 90-93	BONNEY FORGE
					GS-519	1	¾×½				—				INSERT S.W.		NOS 90-93	
					GS-520	1	[illegible]			—	—	—			SOCK WELD BOSS			EF-358 FIG #6
					GS-521	2	5"			40	—	—	STEEL	S.A.E. 1020	CHILL RING TYPE "B"			BETH. STD. EF-358
				4	GS-522	4	3½"				—	—			"A"			
				4	GS-523	11	3½"				—	—			"B"			
				4	GS-524	13	3"				—	—			"A"			
				4	GS-525	14	3"				—	—			"B"			
				4	GS-526	9	2½"				—	—			"A"			
				4	GS-527	10	2½"				—	—			"B"			

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4-8-77		1. ADDED GE-526 THRU GE-535 AND GS-514 THRU GS-518 2. INC. THE QTY. OF THE FOLLOWING GE-513 (1-2) GE-516 (1-2). 3. REVISED THE FOLLOWING FROM STEEL TO CHR. MOLY STEEL: GE-501, GE-503, GE-506, GE-507, GE-508, GE-509, GE-513, GE-516, GE-521.	G.L.W.	[illegible]
2	9-28-77		1. ADDED GS-519 & GS-520	PCG	
3	1-31-78		1. ADDED GE-536 THRU GE-544	RAM	
4	4-28-78		1. ADDED FITTINGS GS-522 THRU GS-528, GE-545 AND GE-546 AS PER Y.I.S. 4650-22-134 2. REVISED QTY. OF ITEMS GE-528 FROM 5 TO 8, GE-532 2 → 3, GE-503 1 → 2	L.R.K.	

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT. CONTAINERSHIP	8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE [illegible] DATE 10-28-76
DRAWN WE APPROVED
TRACED APPROVED
CHECKED [illegible] APPROVED

PLAN NO. M4650-371-3 ALT. NO. 4

FITTING LIST
FOR
GLAND SEALING AND
EXHAUST SYSTEM

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	9-16-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

UAO-50237

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

M-695

LIST OF FITTINGS

PIPING PACKAGE UNIT APPLICATION: UNIT #1 – UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

STRUCTURAL UNIT 7	STRUCTURAL UNIT #15	REQUISITION NO.		CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	
	2	506902				GE-500	2	2½"	2	950°	40	.203	B16.9	CHR-MO STL	A234 GR WP11	ELBOW-90° B.W.-L.R.	GLAND EXHA
	1	506902-A				GE-501	1	3"				.216				TEE B.W.	
		SUPPLY				GE-502	2	4"		770		.237		STEEL-SMLS	A234 GR WPB	ELBOW-90° B.W.-L.R.	
	2	506902-A	506902-C		4	GE-503	2	3"		950		.216		CHR-MO-STL	A234 GR WP11		
		SUPPLY				GE-504	4	2½"		770		.203		STEEL-SMLS	A234 GR WPB		
		506902				GE-505	1	5"×4"				.258×.237				ELBOW REDUCING 90° B.W.	
	1	-A				GE-506	1	5×5×2½		950		.216×.203		CHR. MOLY STL	A234 GR WP11	TEE REDUCING B.W.	
	1	-A				GE-507	1	4×4×3½				.237×.226				TEE REDUCING B.W.	
	1	-A				GE-508	1	3½×2"				.226×.154				REDUCER CONCENTRIC B.W.	
	2	506903-A				GE-509	6	2"			3000#	—	B16.11		A182 GR F11	ELBOW-90° S.W.	
2		506903				GE-510	1	1½"		770		—		FORGED STEEL	A-105		
						GE-511	2	1¼"				—					
						GE-512	5	1"				—					
	2	506903-A				GE-513	2	¾"		950		—		CHR. MOLY STL.	A182 GR F11		
		506903				GE-514	1	1¼"		770		—		FORGED STEEL	A-105	TEE S.W.	
						GE-515	2	1"				—					
	2	506903-A				GE-516	2	1"×1"×¾"		950		—		CHR. MOLY STL	A182 GR F11	TEE REDUCING S.W.	
		506903				GE-517	1	2"×1½		770		—		FORGED STEEL	A-105	REDUCING INSERT	
						GE-518	1	1×¾				—					
		506905				GE-519	1	4-3½×1½				—	—			SOCKOLET IPS RUN & OUTLET	
		UAO				GE-520	1	1¼"			—	—	—			SOCKET WELDING BOSS	
	4					GE-521	5	1"		950	—	—	—	FGD CHR. MOLY STL.	A182 GR F11		
						GE-522	2	½"		770	—	—	—	FORGED STEEL	A-105		
		SUPPLY				GE-523	2	1¼"			40	.140	—	SMLS CARBON STL	A106 GR B	NIPPLE-4½" LG BLK-THD ONE END	
	3	UAO				GE-524	4	1¼"			—	—	—	STEEL	—	FUNNEL	
	4	506911				GE-525	4	2½"		950°	40	—	—	CHR-MOLY	A335 GR P11	CHILL RING FOR 2½" PIPE	
	2	506911-A				GE-526	2	4"				—	—			4"	
	2					GE-527	2	3½"				—	—			3½"	
	7		506911-C		4	GE-528	8	3"				—	—			3"	
	1	506902-A				GE-529	1	4"×3"			40	.237×.216	B16.9	SMLS CHR MOLY STL	A234 GR WP11	90° REDUCING ELBOW-B.W.-L.R.	
	2	506903-A				GE-530	2	1"			3000#	—	B16.11	FGD CHR. MOLY STL	A182 GR F11	90° ELBOW-S.W.	
	2					GE-531	2	1"				—				45° ELBOW-S.W.	
	3	506911-A			4	GE-532	3	2½"			40	—	—	CHR. MOLY	A335 GR P11	CHILL RING FOR 2½" PIPE	
	3					GE-533	3	4"				—	—			4"	
	1					GE-534	1	3½"				—	—			3½"	
	6					GE-535	6	3"				—	—			3"	
4		506903-C			3	GE-536	4	½"		770°	3000#	—	B16.11	FORGED STL	A105	ELBOW 90° S.W.	
2					3	GE-537	2	½"				—				45°	
2					3	GE-538	2	1½"×½"				—				REDUCER INSERT S.W.	
2					3	GE-539	2	1½"×¾"				—				REDUCING COUPLING S.W.	
2					3	GE-540	2	1½"×1¼"				—				REDUCER INSERT S.W.	
2		UAO			3	GE-541	2	⅜"			80	.126	—	SMLS. CARBON STL	A106 GR B	NIPPLE-6" LG. BLK-THED ONE END	
2		506903-C			3	GE-542	2	½"			3000#	—	B16.11	FORGED STL	A105	UNION-SOCKET WELD	
2					3	GE-543	2	1½"			3000#	—				TEE-SOCKET WELD	
2		UAO			3	GE-544	2	1½"	—	—	—	—	—	STEEL	[illegible]	PIPE SLEEVE "FIG. 2"	
	1	506902B			4	GE-545	1	3½"			SCH 40	.226	B16.9	CHR. MOLY	A335 GR WP11	ELBOW 90° BUTT WELD	
		506911-B			4	GE-546	1	2"			SCH 40	—	—			CHILL RING "TYBE "B"	
	5	SUPPLY				GS-500	5	3½"	2	770°	40	.226	B16.9	STEEL SMLS	A234 GR WPB	ELBOW-90° B.W. L.R.	
	5					GS-501	5	3"				.216					
	6					GS-502	7	2½"				.203					
	1	506902				GS-503	1	3½"				.226				45° B.W.	
	1					GS-504	1	3"				.216					
	1					GS-505	1	3½"×3"				.226×.216				REDUCER CONCENTRIC B.W.	
	1					GS-506	1	5"×3"				.258×.216				ECCENTRIC B.W.	
	1					GS-507	1	5"×3½"				.258×.226					
	1					GS-508	1	3½"				.226				TEE B.W.	
	1					GS-509	1	3"				.216					
	1					GS-510	1	2½"				.203					
	1	506903				GS-511	1	1"			3000#	—	B16.11	FORGED STEEL	A-105	ELBOW 90° SOCKET WELD	
	1					GS-512	1	1"				—				TEE SOCKET WELD	
	2					GS-513	2	½"				—					
	1	—			1	GS-514	1	1"			—	—	—	—	—	STRAINER	
	1	UAO			1	GS-515	1	½"			—	—	—	FORGED STEEL	A-105	SOCK. WELD BOSS	
	1	506903-A			1	GS-516	1	1×1×½			3000#	—	B16.11	FORGED STEEL	A-105	TEE SOCK. WELD	
	1	UAO			1	GS-517	1	½"			150#	—	—	STAIN. STEEL	AISI 316	ORIFICE PLATE FOR 1" PIPE, ½" DIA., TYPE A, [illegible]	
	2	506903-A			1	GS-518	2	1"×½"			3000#	—	B16.11	FORGED STEEL	A-105	REDUCING COUPLING S.W.	
	1	506903-B			2	GS-519	1	½"×¼"				—				INSERT S.W.	
	1	UAO			2	GS-520	1	1"			—	—	—			SOCK WELD BOSS	
	2	506911-B			4	GS-522	2	5"			40	—	—	STEEL	S.A.E. 1020	CHILL RING TYPE "B"	
	4				4	GS-523	4	3½"				—	—			"A"	
	11				4	GS-524	11	3½"				—	—			"B"	
	13				4	GS-525	13	3"				—	—			"A"	
	14				4	GS-526	14	3"				—	—			"B"	
	9				4	GS-527	9	2½"				—	—			"A"	
	10				4	GS-528	10	2½"				—	—			"B"	

EF-529
NO. PLAN NO

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-3

FRAME 2 OF 2

LIST OF PIPES

REQUISITION NO	CODE NO (FUTURE USE)	ALT. NO.	PIPE IDENT	AMOUNT REQ'D BLK.	AMOUNT REQ'D GALV	AMOUNT REQ'D TOTAL	SIZE	SCH NO	WALL THK	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
		1,3	E-1	10'-0"		10'-0"	36"	10	.312	1-PSIA	102	B36.10	PIPE WELDED STEEL	A285 GR.B	MAIN TURBO GENERATOR EXHAUST			
		3	E-2	8'-0"		8'-0"	12"	40	.406	12.5	204		SEAMLESS STL.	A106 GR.B	1ST L.P. EXTRACTION STEAM			NOS. 128,135,136
		3	E-3	105'-0"		105'-0"	10"		.365	48	480			A53, TY.S GR.B	EXHAUST STEAM TO D.C. HTR. & DISTILLER			128,135
		1	E-4	50'-0"		50'-0"	8"		.322	48	480				EXHAUST STEAM - D.C. HTR. & MN. CONDENSER			
		5,7	E-5	100'-0"		100'-0"	6"		.280	48	480				EXH. FROM MN. FD. PUMPS - OUTLET D.C. HTR.			
		4,7	E-6	104'-0"		100'-0"	5"		.258	48	480				D.C. HTR. - 3RD STAGE HTR. - CROSSOVER EXTRACT.			
		1	E-7	85'-0"		85'-0"	4"		.237	48	296				DISTILL. PLANT STAND-BY SUPPLY			
		3,4,5	E-8	140'-0"		140'-0"	4"		.237	360	255			A106-GR.B	H.P. EXTRACT. TO 4TH STAGE HTR., & CARGO OIL WATER HTR			128,135,136
			E-9	50'-0"		50'-0"	3"		.216	48	296		SEAMLESS	A53 TY.S GR.B	STM. TO HTG. SYS. & CARGO OIL H.W. HTRS.			128,135
		4,7	E-10	80'-0"		80'-0"	2 1/2"		.203	48	480				STM. TO F.O. SERV. TK. HTG. & L.O. SETT. TK. MANIF.			
			E-11	245'-0"		245'-0"	2"		.154	48	480			A106-GR.B	STM. TO P&S F.O. HTG. COIL & H.W. HTR.			
		5,6,7	E-12	132'-0"		132'-0"	1"		.133	48	480				STM. TO GARBAGE DISPOSAL STM. OUT			
			E-13	10'-0"		10'-0"	3/4"		.113	48	296				STM. HDR. DRAINS			
			E-14	2'-0"		2'-0"	1/2"		.109	48	296				STM. TRAPS BY-PASS @ F.O. PUMPS & L.P. DRAINS			
			E-15	125'-0"		125'-0"	1/2"		.109	48	296		SEAMLESS STL.	A106 GR.B	GAGE BRANCHES @ STM. MNS.			
		2	E-16	15'-0"		15'-0"	3/4"		.113	48	296				STM. TO F.O. TRANSFER MAIN			
		4,6	E-17	40'-0"		40'-0"	1/2"		.109	48	296				GAGE BRANCHES @ 3RD & 4TH STAGE HTRS. & MISC.			
		4	E-18	14'-0"		14'-0"	3/8"		.091	48	296				HEADER DRAINS			
		4	E-19	20'-0"		20'-0"	1 1/2"		.145	48	296				3RD & 4TH STAGE SAF. VAL. INLETS & STRN'R BLOWDOWN			
			E-20	10'-0"		10'-0"	3/8" O.D.	—	.035	—	—	—	COPPER TUBE - SMLS	B75-ALLOY 122	SENSING LINES - PILOT CONTROLLER			NOS. 133
			E-21	25'-0"		25'-0"	1/4"	40	.088	48	296	B36.10	PIPE SEAMLESS STEEL	A106 GR.B	L.P. SERV. STEAM			NOS. 128,135
		1	E-22	100'-0"	—	100'-0"	28"	10	.312				WELDED STEEL PIPE	SEE NOTES	DIESEL GENERATOR EXHAUST			NOS. 128,134
		3	E-23	200'-0"		200'-0"	16"	20	.312				SEAMLESS STEEL	A53 TY.S GR.B	ESCAPE			135
		3	E-24	10'-0"		10'-0"	10"	40	.365									
		3,4,6	E-25	231'-0"		231'-0"	8"		.322									
		3,4,7	E-26	180'-0"		180'-0"	6"		.280									
		3	E-27	55'-0"		55'-0"	4"		.237				CARBON STEEL PIPE	A53, TY.E or S, GR.B				
		3	E-28	150'-0"			3"		.216									
		3	E-29	20'-0"			2"		.154									
		3	E-30	160'-0"			1"		.133									
		3	E-31	210'-0"			1/2"		.109									
		4,7	E-32	20'-0"		20'-0"	1/2"	80		48	296	B36.10	PIPE SMLS STEEL	A-106 GR-B	STRN'R BLOW DOWN			& 136
		4	E-33	60'-0"		60'-0"	1/2"	40				B36.19	SMLS STN. ST'L PIPE	A-312 GR.316	ACTUATING LINE FOR PILOT & BOILER SAFETY VALVE			
		4	E-34	40'-0"		40'-0"	1/2"	80				B36.10	PIPE SMLS STEEL	A-53 TY.S GR.B	ESCAPE			& 135

LIST OF VALVES

* NECESSARY ST'L FOR THESE ITEMS HAVE BEEN ORDERED

REQUISITION NO	CODE NO (FUTURE USE)	ALT NO	VALVE IDENT	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	PRESS STD	ANSI DIM STD	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D	END TYPE	ANSI DIM STD	TYPE	SPECIAL NOTES FROM REF#1	MANUFACTURER DWG. OR FIG. NO.
			E-100	1	36"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS. STL	STNS. STL	STNS. STL.	—	FLGD. F&D	B16.5	GATE, W/GLAND WAT. SEAL-MOT. OPER.	SEE NOTE 96	
			E-101	1	12"					CAST STEEL	A216 GR.WCB				—			GATE (W/GLAND WAT. SEAL)	NOS. 2,3,4,6,14,95,90-93	LUNK'NH'M'R. FIG. 1502
		4	E-102	1	10"										—				2,3,4,6,14,95,90-93	1502
			E-103	1	4"										—			GATE (LOCKED CLOSED-SEE GEN. NOTE1)	2,4,6,90-93	1512
			E-104	2	2"										—			GLOBE	4,6,90-93	1542
			E-105	1	5"										—				4,6,90-93	1542
			E-106	5	3"										—				4,6,90-93	1542
			E-107	2	2 1/2"										—				4,6,90-93	1542
			E-108	5	1"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GLOBE	1,90-93	POWELL FIG. 110
			E-109	2	3/4"				—						—				1,90-93	
			E-110	9	1/2"				—						—				1,90-93	
			E-111	13	1/2"			600#	B16.10	FORGED STEEL	A105 GR.II	STNS STL	STNS. STL	STNS. STL	—	FLGD. F&D.	B16.5		4,5,90-93	EDWARD FIG. 828
			E-112	1	1 1/2"										—				4,5,90-93	828
			E-113	1	10"			150#	—	CAST STEEL	A216 GR.WCB				—	FLANGED, F&D	B16.5	CHECK, SCRD. DN. W/OIL DASHPOT	96	SIM. ATWOOD & MORRILL NO. 2375-F
		2,4	E-114	2	6"				—						—			GLOBE LIFT CHECK - STAY OPEN TYPE	96	PENCO
			E-115	1	6"				B16.10						—			GLOBE STOP-CHECK, NON-CHATTER	NOS. 2,4,6,7,90-93	POWELL FIG. 1576
			E-116	1	5"			300#							—			GLOBE STOP-CHECK, MOT. OPER.	SEE NOTE 96	INGALLS P.O. 19-[illegible]-01 ITEM 6
			E-117	1	4"					CAST CHROME-MOLY	A217 GR.WC6				—				SEE NOTE 96	ITEM 5
		2	E-118	1	4"			150#		CAST STEEL	A216 GR.WCB				—			GLOBE STOP-CHECK, NON-CHATTER	NOS. 2,4,6,7,56,75,95,90-93	POWELL FIG. 1576
			E-119	1	12"				—						—			CHECK, SCREW DN. W/OIL DASHPOT	96	SIM. ATWOOD & MORRILL NO. 2375-F
		4	E-120	1	6"x8"	—	—	—	—	—	—	—	—	—	—	FLANGED, F&D	B16.5	RELIEF SET @ PSI 45 PSI AUX EXH. S.	ORDERED ON REF #3	SV-10
			E-121	1	3"x4"	—	—	—	—	—	—	—	—	—	—			SET @ PSI 50 PSI D.C. HTR		
			E-122	1	1 1/2"x2"	—	—	—	—	—	—	—	—	—	—			SET @ 180 PSI - 3RD STAGE HTR.		
			E-123	1	1 1/2"x2 1/2"	—	—	—	—	—	—	—	—	—	—			SET @ 380 PSI - 4TH STAGE HTR.		
			E-124	1	2 1/2"	—	—	—	—	—	—	—	—	—	—			CONTROL VAL. - EXTRACTION		INGALLS CODE 19-[illegible]
			E-125	1	6"	—	—	—	—	—	—	—	—	—	—			- EXH. STM. DUMP		
			E-126	1	1"	—	—	—	—	—	—	—	—	—	—			REGULATOR - H.W. HTR. TEMP.		INGALLS CODE 19 [illegible] ITEM 1
			E-127	1	1 1/2"	—	—	—	—	—	—	—	—	—	—			CARGO OIL H.W. HTR.		INGALLS CODE 19 [illegible] ITEM 6
			E-128	6	3/4			150#	—	FORGED STEEL	A105 GR.II	STNS. STL	STNS. STL	STNS. STL	—			GLOBE - BOLTED BONNET	NOS. 4,90-93	LUNK'NH'M'R. FIG. 1710-MOD.
			E-129	1	1"				—						—				4,90-93	1710-MOD
		4	E-130	2	3/4"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCRD.	B2.1	GLOBE	1,90-93	POWELL FIG. 110
			E-131	1	3/4"			200#	—	BRONZE	B61	BRONZE	BRONZE	—	MONEL	SCRD.	B2.1	SWING CHECK, SCRD. CAP	90-93	LUNK'NH'M'R. FIG. 554-Y
			E-132	1	8"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS. STL	STNS. STL	STNS. STL	—	FLANGED, F&D	B16.5	GATE (W/GLAND WAT. SEAL)	2,3,4,6,14,95,90-93	1502
			E-133	1	8"										—			GLOBE	3,4,6,95,90-93	1542
			E-134	7	1"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1		1,90-93	POWELL FIG. 110
			E-135	1	1"			200#											1,90-93	
			E-136	1	1/4"			600#	—	FORGED STEEL	A105 GR.II	STNS. STL	STNS. STL	STNS. STL	—			GLOBE STOP-CHECK	4,5,90-93	EDWARD FIG. 868
		5	E-137	2	1/2"			150#	B16.10	FORGED STEEL	A105 GR.II				—	SOCK. WELD	—	GATE SWD. U.B. INSIDE SCREW STEM		VOGT SWS-1853-FB-[illegible]
		2,6	E-138	3	1"			200#		BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GATE - RISING STEM	NOS. 1,90-93	POWELL FIG. 375
		2	E-139	1	2 1/2"										—	FLANGED, F&D	B16.5	PRESS. REDUCING - DISTILLING PLANT STANDBY SUPPLY		LESLIE DL-3
		2	E-140	1	1 1/2"x2"			150#										RELIEF SET @ 8 PSI	ORD. ON REF #3	SV-16
		2	E-141	1	5"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS. STL	STNS. STL	STNS. STL	—			GATE	NOS. 2,4,6,90-93	LUNKENHEIMER FIG. 1502
		2	E-142	2	4"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS. STL	STNS. STL	STNS. STL	—			GLOBE	4,6,90-93	1542
		4	E-143	2	1/2"	—	—	200#	—	BRONZE	B-61	BRZ	BRZ	BRZ	—	SCR'D.	B2.1		4,4,90-93	POWELL FIG. #110
		4	E-144	1	1 1/2"	—	—	200#	—	BRONZE	B-61	BRZ	BRZ	BRZ	—	SCR'D.	B2.1			
		5	E-145	3	1/2"				—									GLOBE STOP CHECK	1,90-93	#110 MOD
		5	E-146	2	1/4"			—	—	STN. STEEL	—	—	—	—	—	SCR'D.		SOLENOID VALVE	—	R.T. LAWRENCE CO. DWG. 3600-A
		6	E-147	1	1"			200#		BRONZE	B-61	BRZ	BRZ	BRZ				GLOBE, STOP CHECK	NOS. 4, 90-93	POWELL FIG. 134
		7	E-148							BRASS	B283					SCR'D	B2.1	SOLENOID VLV.	96	ASCO FIG 8302EP TR
		7	E-149					200#		BRONZE	B61	BRZ	BRZ	BRZ		INLET SCR'D OUTLET HOSE	B2.1 / B2.4	GLOBE HOSE VLV. W/CAP & CHAIN	1,39,90-93	POWELL FIG. 110 H
		7	E-150					150#		FORGED STL	A105	STN	STN	STN		FLANGED	B16.5	GLOBE VLV. BOLTED BONNET	4,90-93	LUNK'NH'M'R FIG. 1710 MOD

GENERAL NOTES

1-DESIGNATIONS "LOCKED CLOSED" OR "LOCKED OPEN" ARE LISTED FOR YARD/TECHNICAL INFORMATION ONLY-NOT FOR ORDERING PURPOSES. LOCKS AND LOCATIONS ARE PROVIDED ON REF #2

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	2-9-77		1 ADDED E-22 PO PER DESIGN DEVELOPMENT 2 REVISED ASTM SPEC. OF PIPE E-1 TO ALLOW YARD FABRICATION	G.L.W. B.R.E.	
2	5-20-77		1-APPLIED SP'L. NOTE #96 TO VALVE E-114 IN LIEU OF NOTES 4,6,13,95,90-93; CHANGED MFG. FROM LUNKENHEIMER CO. TO PENCO 2-ADDED SP'L. NOTES 56 & 75 TO VALVE E-118. 3. REVISED QTY OF E-1 FROM 6'-0" TO 20'-0"; E-16 FROM 4'-0" TO 15'-0". 4. ADDED E-138 THRU E-142	PCG	G.G. SHARP LTR. DATED 7-14-77
3	8-17-77		1. REVISED SERVICE DESCRIPTION OF PIPE E-2 TO READ L.P. EXTRACTION STM TO COMPLY WITH COMMENT IN G.G. SHARP LTR OF APPROVAL DATED MAY 19, 1977 FILE 5387/548-10 2. SERVICE DESC. OF PIPE E-8 TO READ "CARGO COIL HTR. 3. ADDED E-23 TO E-31 ESCAPE PIPING 4. REVISED QTY OF E-1 FROM 20' TO 10'	AG	G.G. SHARP LTR. DATED 8-17-77
4	10-6-77	2 2 2 2	1-INCR. QTY OF: E6 (80'-100'), E8 (100'-120'), E-10 (65'-80'), E19 (15'-20'), E-25 (94'-220') & E26 (120'-140'). 2-DELETED E-18 & E-130 3-ADDED E-32, E-33, E-34, E-143 & E-144 4-FOR E114, CORRECTED THE MFG. TO READ "PENCO" 5-FOR E120, CHG'D THE SIZE (4"x6" TO 6"x8")	PCC	10/[illegible]/77
5	12/14/77	A L L	1-INCREASED PIPE E-5 FROM 30'-0" TO 100'-0", " PIPE E-8 " 120'-0" TO 140'-0", " PIPE E-12 " 80'-0" TO 100'-0" 2-ADDED VALVE NOS. E-145 & E-146 TO LIST. 3-DELETE VALVE NOS. E-137 FROM LIST.	F.J.D.	
6	2-23-78		1. ADDED E-147. 2. INCREASED THE QTY FOR: E-12 (100' TO 112'), E-17 (1' TO 40'), E-25 (220' TO 231'), E-138 (2 TO 3).	RHM	2-23-78
7	6/30/78		1-REVISED DESIGN CRITERIA FOR AUX EXHAUST MN. & L.P. SERV. STEAM TO AGREE W/PIPING DIA. M4650-111-20-13 ALT 2ND. 2-INCR. QTY OF E-12 (112'-132') & E-26 (140'-180'), E6 (100'-104') 3-ADDED VLVS E-148 THRU E-150.	PCG	7/6/78

UAO-50139

REFERENCE PLANS

NO.	PLAN NO.	TITLE
3	M4650-111-13	SCHEDULE OF SAFETY & RELIEF VALVES
2	M4650-372-2	ENGINEERS LOCK LIST
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

HULL	DESIGN	CHARGE
4651		8450
4650	27,340 DWT. CONTAINERSHIP	8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE
DRAWN G.G.K.
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-371-04-1
ALT. NO. 7

PIPE & VALVE LIST FOR AUX. EXHAUST, L.P. BLEEDER STEAM AND ESCAPE PIPING

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

	DATE OF ISSUE
ALTERATION	1 2 3 4 5 6 7
ENGINEERING DISTRIBUTION	[illegible]
MAIL: OWNERS	[illegible]
AMERICAN BUREAU	[illegible]
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	[illegible]
JOINER CONT'R.	
INSPECTION: OWNER'S INSP.	[illegible]
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
OFFICE: HULL DRAFT. - 21	[illegible]
MACH. DRAFT. - 22	2 2 2 2 2 2 2
ELEC. DRAFT. - 23	[illegible]
OUTFIT DRAFT. - 25	
ESTIMATING	
MISC.: J. DOUGHERTY (CY13)	[illegible]
PRODUCTION (BCO)	
ORDER DEPT.	
JOINER CONT. YARD	
WILLIAMS - PLANNING	[illegible]
TOTAL ENG'R DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
YARD: [illegible]	[illegible]
SHIP SUPT.	[illegible]
PIECE RATE - 11	[illegible]
TEST DEPARTMENT	[illegible]
[illegible]	[illegible]
STEEL PLANNING	[illegible]
STRUCTURAL: GROUND ASSEMBLY	2 2 2 2 2 2
[illegible] DEPT.	[illegible]
P. MCNAIR	[illegible]
H. LEVY	[illegible]
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	[illegible]
OPTICAL DETAIL - 45	[illegible]
WET DOCK	
MACH'Y & OUTFIT: PIPE SHOP - 52	[illegible]
OUTFIT. #1 PIER	[illegible]
PIPE DRAFT - 52	[illegible]
BOILER SHOP - 58	[illegible]
OUTSIDE MACH. - 60	[illegible]
[illegible]	[illegible]
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 51	[illegible]
PAINT SHOP - 75	[illegible]
WELDING	
OTHER: MOLD LOFT - 41	[illegible]
BRACKET SHOP	
TOTAL YARD DIST.	[illegible]

SQ. FT.

M-705

LIST OF PIPES

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #	UNIT #	UNIT #13	UNIT #	UNIT #15	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #[illegible]
	10'-0"																							
	3'													5'-0"										
	25'				10'	15'						43'												
18'					8'	14'								10'-0"										
8'				37'-0		25'						20'		1'-0"										
5'		50'				6'			4'			20'		14'-0"										
1'		4'						23'	40'															
36'		45'		18'-0		6'								30'-0"										
30'	5'					7'						4'		1'-0"										
25'	30'				0'-6"																			
				8'-0				3'-0				30'												
2'	40'							30'-0				40'												20'
	10'																							
									10'															
	20													15'-5"										
	15'																							
														40'-0"										
4'									3'															
5'			5'																					
							22'					70'												
												180'												
												2'												
						16'	15'					200'												
						18'			24'			122'												
												5'												
							10'					20'												
												45												
25'			100'						60'															
									10'															
							30'																	
												60'												

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D.			SIZE	SCH NO.	WALL THK	DESIGN CRITERIA		ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	S
						BLK.	GALV.	TOTAL				P.S.I.	°F				
*				2,3	E-1	10'-0"		10'-0"	36"	10	.312	1-PSIA	102	B36.10	PIPE WELDED STEEL	A285 GR.B	MAIN TURBO GENER
504777				3	E-2	8'-0"		8'-0"	12"	40	.406	12.5	204		SEAMLESS STL.	A106 GR.B	12" L.P. EXTRACTION
				7'	E-3	105'-0"		105'-0"	10"		.365	48	480			A53 TY.S GR.B	EXHAUST STEAM TO
				7'	E-4	50'-0"		50'-0"	8"		.322	48	480				EXHAUST STEAM-D.C
	504444-G			5,7'	E-5	100'-0"		100'-0"	6"		.280	48	480				EXH. FROM MN. FD. PUMP
	504444-F	504444-J		4,7²	E-6	104'-0"		100'-0"	5"		.258	68	480				D.C. HTR.-3RD STAGE HT
				7'	E-7	85'-0"		85'-0"	4"		.237	48	296				DISTILL. PLANT STAN
	504444-F	504444-G		4,5	E-8	140'-0"		140'-0"	4"		.237	360	755			A106-GR.B	H.P. EXTRACT. TO 4T
				7'	E-9	50'-0"		50'-0"	3"		.216	48	296		SEAMLESS	A53 TY.S GR.B	STM. TO HTG. SYS. & CA
	504444-F			4,7'	E-10	80'-0"		80'-0"	2½"		.203	48	480				STM. TO F.O. SERV. TK
				7'	E-11	245'-0"		245'-0"	2"		.154	48	480			A106-GR.B	STM. TO P&S F.O. HTG
	504444-G	504444-J		5,6,7¹²	E-12	182'-0"		182'-0"	1"		.133	48	480				STM. TO GARBAGE DISP
				7'	E-13	10'-0"		10'-0"	¾"		.113	48	296				STM. HDR. DRAINS
				7'	E-14	2'-0"		2'-0"	½"		.109	48	296				STM. TRAPS BY-PASS &
				7'	E-15	125'-0"		125'-0"	½"		.109	48	296		SEAMLESS STL.	A106 GR.B	GAGE BRANCHES @ ST
	504444-B			2,7'	E-16	15'-0"		15'-0"	¾"		.113	48	296				STM. TO F.O. TRANSFE
	504444-H			6,7'	E-17	40'-0"		40'-0"	½"		.109	48	296				GAGE BRANCHES @ 3
				~~4~~	~~E-18~~	~~14'-0"~~		~~14'-0"~~	~~⅜"~~		~~.091~~	~~45~~	~~290~~				~~HEADER DRAINS~~
504444	504444-F			4,7'	E-19	20'-0"		20'-0"	1½"		.145	48	296				3RD & 4TH STAGE SA
[illegible]					E-20	10'-0"		10'-0"	¼" O.D.	—	.035	—	—	—	COPPER TUBE - SMLS.	B75-ALLOY 122	SENSING LINES - PIL
504777				7'	E-21	25'-0"		25'-0"	¼"	40	.088	48	296	B36.10	PIPE SEAMLESS STEEL	A106 GR.B	L.P. SERV. STEAM
504444-A				1	E-22	100'-0"	—	100'-0"	28"	10	.312				WELDED STEEL PIPE	SEE NOTES	DIESEL GENERATOR EXHAUS
504444-C				3	E-23	200'-0"		200'-0"	16"	20	.312				SEAMLESS STEEL	A53 TY.S GR.B	ESCAPE
				3	E-24	10'-0"		10'-0"	10"	40	.365						
	504444-F			3,4,6	E-25	231'-0"		231'-0"	8"		.322						
	504444-F	504444-J		3,4,7²	E-26	180'-0"		180'-0"	6"		.280						
				3	E-27	55'-0"		55'-0"	4"		.237				CARBON STEEL PIPE	A53 TY.E or S GR.B	
				3	E-28	150'-0"			3"		.216						
				3	E-29	10'-0"			2"		.154						
				3	E-30	160'-0"			1"		.133						
				3	E-31	210'-0"			½"		.109						
504444-F				4,7'	E-32	20'-0"		20'-0"	½"	80		48	296	B36.10	PIPE SMLS STEEL	A-106 GR-B	STRN'R BLOWDOWN
504444-F				4	E-33	60'-0"		60'-0"	½"	40				B36.19	SMLS STN. ST'L. PIPE	A-312 GR.316	ACTUATING LINE FOR PIL
504444-F				4	E-34	60'-0"		60'-0"	12"	20				B36.10	PIPE SMLS STEEL	A-53 TY.S GR.B	ESCAPE

LIST OF VALVES

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #	UNIT #	UNIT #13	UNIT #	UNIT #15	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #371-07-4	UNIT #[illegible]
	1																							
	1																							
					1																			
									1															
												2												
1																								
4												1												
1	1																							
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REQUISITION NO.			CODE NO. (FUTURE USE)	ALT NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA		PRESS STD	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM				END TYPE	ANSI DIM STD.	
								P.S.I.	°F					SEAT	DISC	STEM	PIN WHERE REQ'D			
504400					E-100	1	36"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS. STL	STNS. STL.	STNS. STL.	—	FLGD. F&D.	B16.5	GATE
504400-C					E-101	1	12"					CAST STEEL	A216 GR.WCB				—			GATE
				4	E-102	1	10"										—			
					E-103	1	4"										—			GATE
					E-104	2	2"										—			GLOB
					E-105	1	5"										—			
					E-106	5	3"										—			
					E-107	2	2½"										—			
					E-108	5	1"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GLOB
					E-109	2	¾"				—						—			
					E-110	9	½"				—						—			
					E-111	13	½"			600#	B16.10	FORGED STEEL	A105 GR.II	STNS.STL	STNS.STL.	STNS.STL.	—	FLGD. F&D.	B16.5	
					E-112	1	½"										—			
504400-B	—	—			E-113	1	10"			150#	—	CAST STEEL	A216 GR.WCB				—	FLANGED, F&D	B16.5	CHECK
505500-D				2,4	E-114	2	6"				—						—			GLOB
504400-C					E-115	1	6"				B16.10						—			GLOB
504400-A	—				E-116	1	5"			300#							—			GLOB
504400-A	—				E-117	1	4"					CAST CHROME-MOLY	A217-GR.WC6				—			
504400-C				2	E-118	1	4"			150#		CAST STEEL	A216-GR.WCB				—			GLOBE
504400-B					E-119	1	12"				—						—			CHECK
—	—			4	E-120	1	6"x8"	—	—	—	—	—	—	—	—	—	—	FLANGED, F&D	B16.5	RELIE
—	—				E-121	1	3"x4"	—	—	—	—	—	—	—	—	—	—			
—	—				E-122	1	1½"x2"	—	—	—	—	—	—	—	—	—	—			
—	—				E-123	1	1½"x2½"	—	—	—	—	—	—	—	—	—	—			
—	—				E-124	1	2½"	—	—	—	—	—	—	—	—	—	—			CONT
—	—				E-125	1	6"	—	—	—	—	—	—	—	—	—	—			
—	—				E-126	1	1"	—	—	—	—	—	—	—	—	—	—			REGU
—	—				E-127	1	1½"	—	—	—	—	—	—	—	—	—	—			
504400-C					E-128	6	¾"			150#	—	FORGED STEEL	A105 GR.II	STNS.STL	STNS.STL	STNS.STL	—			GLOB
					E-129	1	1"				—						—			
				~~4~~	~~E-130~~	~~2~~	~~⅜"~~			~~200#~~	~~—~~	~~BRONZE~~	~~B61~~	~~BRONZE~~	~~BRONZE~~	~~BRONZE~~	~~—~~	~~SCRD.~~	~~B2.1~~	~~GLOB~~
504400-C					E-131	1	¾"			200#	—	BRONZE	B61	BRONZE	BRONZE	—	MONEL	SCRD.	B2.1	SWING
					E-132	1	8"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS.STL	STNS.STL	STNS.STL	—	FLANGED, F&D	B16.5	GATE
					E-133	1	8"										—			GLOB
					E-134	7	1"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	
					E-135	1	1"			200#	—						—			
					E-136	1	¼"			600#	—	FORGED STEEL	A105 GR.II	STNS STL	STNS STL	STNS STL	—			GLOBE
				~~[illegible] 5~~	~~E-137~~	~~2~~	~~½"~~			~~150#~~	~~B16.10~~	~~FORGED STEEL~~	~~A105 GR.II~~				~~—~~	~~SOCK. WELD~~	~~—~~	~~GATE~~
[illegible]	504400-G			2,6	E-138	3	1"			200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED.	B2.1	GATE
500020				2	E-139	1	2½"			—	—	—	—	—	—	—	—	FLANGED, F&D	B16.5	PRESS
—	—	—		2	E-140	1	4"x6"			150#	—	—	—	—	—	—				RELIEF
504400-D				2	E-141	1	5"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS STL	STNS STL	STNS STL	—			GATE
504400-D				2	E-142	2	4"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS STL	STNS STL	STNS STL	—			GLOBE
SUPPLY				4	E-143	2	¼"	—	—	200#	—	BRONZE	B-61	BRZ	BRZ	BRZ	—	SCR'D.	B2.1	
				4	E-144	1	1½"	—	—	200#	—	BRONZE	B-61	BRZ	BRZ	BRZ	—	SCR'D	B2.1	
504400-F				5	E-145	2	½"				—									GLOBE
500076-A	500076-A	—	—	5	E-146	2	¼"			—	—	STN. STEEL	—	—	—	—		SCR'D.		SOLE
504400-G				6	E-147	1	1"			200#	—	BRONZE	B-61	BRZ	BRZ	BRZ				GLOB
504400-H				7³	E-148	1	⅜"					BRASS	B283					SCR'D	B2.1	SOLE
504400-J				7³	E-149	1	1"			200#		BRONZE	B61	BRZ	BRZ	BRZ		[illegible]	B2.1 / B2.4	GLOBE
				7³	E-150	1	1"			150#		FORGED ST'L	A105	STN	STN	STN		FLANGED	B16.5	GLOBE

2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-1

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-1

FRAME 1 OF 2

LIST OF PIPES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT	AMOUNT REQ'D BLK	GALV	TOTAL	SIZE	SCH NO	WALL THK	DESIGN CRITERIA PSI	°F	ANSI DIM STD	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
			E-1	10'-0"		10'-0"	36"	10	.312	[illegible]	102	B36.10	PIPE WELDED STEEL	A285 GR.B	MAIN TURBO GENERATOR EXHAUST			
			E-2	185'-0"		185'-0"	12"	40	.406	15	304		SEAMLESS STL.	A106 GR.B	1ST L.P. EXTRACTION STEAM			NOS. 128,135,136
			E-3	180'-0"		180'-0"	10"		.365	48	480			A53 TY.S GR.B	EXHAUST STEAM TO D.C. HTR. & DISTILLER			128,135
			E-4	50'-0"		50'-0"	8"		.322	48	480				EXHAUST STEAM - D.C. HTR. & MN. CONDENSER			
		5	E-5	100'-0"		100'-0"	6"		.280	48	480				EXH. FROM MN. FD. PUMPS - OUTLET D.C. HTR.			
		4	E-6	100'-0"		100'-0"	5"		.258	48	480				D.C. HTR. - 3RD STAGE HTR. - CROSSOVER EXTRACT.			
			E-7	35'-0"		35'-0"	4"		.237	48	296				DISTILL. PLANT STAND-BY SUPPLY			
		4,5	E-8	140'-0"		140'-0"	4"		.337	360	755			A106-GR.B	H.P. EXTRACT. TO 4TH STAGE HTR. & CARGO COIL HTR.			128,135,136
			E-9	50'-0"		50'-0"	3"		.216	48	296		SEAMLESS	A53 TY.S GR.B	STM. TO HTG. SYS. & CARGO OIL H.W. HTRS.			128,135
		4	E-10	80'-0"		80'-0"	2½"		.203	48	480				STM. TO F.O. SERV. TK. HTG. & L.O. SETT. TK. MANIF.			
			E-11	240'-0"		240'-0"	2"		.154	48	480			A106-GR.B	STM. TO P&S F.O. HTG. COIL & H.W. HTR.			
		5,6,7	E-12	132'-0"		132'-0"	1"		.133	48	480				STM. TO GARBAGE DISPOSAL STM. OUT			
			E-13	10'-0"		10'-0"	¾"		.113	48	296				STM. HDR. DRAINS			
			E-14	2'-0"		2'-0"	½"		.109	48	296				STM. TRAPS BY-PASS @ F.O. PUMPS & L.P. DRAINS			
			E-15	135'-0"		135'-0"	1½"		.109	48	296		SEAMLESS STL.	A106 GR.B	GAGE BRANCHES @ STM. MNS.			
			E-16	15'-0"		15'-0"	¾"		.113	48	296				STM. TO F.O. TRANSFER MAIN			
			E-17	40'-0"		40'-0"	½"		.109	48	296				GAGE BRANCHES @ 3RD & 4TH STAGE HTRS. & MISC.			
		4	E-18	14'-0"		14'-0"	⅜"		.091	48	292				HEADER DRAINS			
		4	E-19	20'-0"		20'-0"	1½"		.145	48	296				3RD & 4TH STAGE SAF. VAL. INLETS & STRN'R BLOWDOWN			
			E-20	10'-0"		10'-0"	¼" O.D.	—	.035	—	—	—	COPPER TUBE - SMLS	B75-ALLOY 122	SENSING LINES - PILOT CONTROLLER			NOS. 133
			E-21	25'-0"		25'-0"	1¼"	40	.088	48	296	B36.10	PIPE SEAMLESS STEEL	A106 GR.B	L.P. SERV. STEAM			NOS. 128,135
			E-22	100'-0"	—	100'-0"	28"	10	.312				WELDED STEEL PIPE	SEE NOTES	DIESEL GENERATOR EXHAUST			NOS. 128,134
		3	E-23	200'-0"		200'-0"	16"	20	.312				SEAMLESS STEEL	A53 TY.S GR.B	ESCAPE			135
		3	E-24	10'-0"		10'-0"	10"	40	.365									
		3,4,6	E-25	231'-0"		231'-0"	8"		.322									
		3,4,7	E-26	180'-0"		180'-0"	6"		.280									
		3	E-27	55'-0"		55'-0"	4"		.237				CARBON STEEL PIPE	A53 TY.E or S GR.B				
		3	E-28	150'-0"			3"		.216									
		3	E-29	70'-0"			2"		.154									
		3	E-30	160'-0"			1"		.133									
		3	E-31	210'-0"			½"		.109									
		4	E-32	20'-0"		20'-0"	½"	80		48	296	B36.10	PIPE SMLS STEEL	A-106 GR-B	STRN'R BLOWDOWN			& 136
		4	E-33	60'-0"		60'-0"	1½"	40				B36.19	SMLS STN. ST'L PIPE	A-312 GR 316	ACTUATING LINE FOR PILOT & BOILER SAFETY VALVE			
		4	E-34	60'-0"		60'-0"	12"	20				B36.10	PIPE SMLS STEEL	A-53 TY.S GR.B	ESCAPE			& 135

★ NECESSARY ST'L FOR THESE ITEMS HAVE BEEN ORDERED

LIST OF VALVES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT NO.	VALVE IDENT	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	°F	PRESS STD	ANSI DIM STD	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	DISC	STEM	PIN WHERE REQ'D	END TYPE	ANSI DIM STD	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO.
			E-100	1	36"			150#	B16.10	CAST STEEL	A216 GR WCB	STNS. STL.	STNS. STL.	STNS. STL.	—	FLGD. F&D	B16.5	GATE, W/GLAND WAT. SEAL-MOT. OPER.	SEE NOTE 96	
			E-101	1	12"					CAST STEEL	A216 GR WCB				—			GATE (W/GLAND WAT. SEAL)	NOS. 2,3,4,6,14,95,90-93	LUNK'NH'M'R. FIG. 1502
		4	E-102	1	10"										—				2,3,4,6,14,95,90-93	1502
			E-103	1	4"										—			GATE (LOCKED CLOSED - SEE GEN. NOTE 1)	2,4,6,90-93	1512
			E-104	2	2"										—			GLOBE	4,6,90-93	1542
			E-105	1	5"										—				4,6,90-93	1542
			E-106	5	3"										—				4,6,90-93	1542
			E-107	2	2½"										—				4,6,90-93	1542
			E-108	5	1"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GLOBE	1,90-93	POWELL FIG. 110
			E-109	2	¾"										—				1,90-93	
			E-110	9	½"										—				1,90-93	
			E-111	13	½"			600#	B16.10	FORGED STEEL	A 105 GR II	STNS. STL.	STNS. STL.	STNS. STL.	—	FLGD. F&D	B16.5		4,5,90-93	EDWARD FIG. 828
			E-112	1	1½"										—				4,5,90-93	828
			E-113	1	10"			150#	—	CAST STEEL	A216 GR WCB				—	FLANGED, F&D	B16.5	CHECK, SCRD. DN. W/OIL DASHPOT	96	SIM. ATWOOD & MORRILL
		2,4	E-114	1	6"										—			GLOBE LIFT CHECK - STAY OPEN TYPE	96	PENCO
			E-115	1	6"				B16.10						—			GLOBE STOP-CHECK, NON-CHATTER	NOS. 2,4,6,7,90-93	POWELL FIG. 1576
			E-116	1	5"			300#							—			GLOBE STOP-CHECK, MOT. OPER.	SEE NOTE 96	INGALLS P.O. ITEM 5
			E-117	1	4"					CAST CHROME-MOLY	A217-GR.WC6				—				SEE NOTE 96	ITEM 5
		2	E-118	1	4"			150#		CAST STEEL	A216-GR.WCB				—			GLOBE STOP-CHECK, NON-CHATTER	NOS-2,4,6,7,86,75,95,90-93	POWELL FIG. 1576
			E-119	1	12"										—			CHECK, SCREW DN. W/OIL DASHPOT	96	SIM. ATWOOD & MORRIL
		4	E-120	1	6"×8"	—	—	—	—	—	—	—	—	—	—	FLANGED, F&D	B16.5	RELIEF SET @ PSI 45 PSI AUX EXH. S.	ORDERED ON REF #3	SV-10
			E-121	1	3"×4"	—	—	—	—	—	—	—	—	—	—			SET @ PSI 50 PSI D.C. HTR.		
			E-122	1	1½"×2"	—	—	—	—	—	—	—	—	—	—			SET @ 180 PSI - 3RD STAGE HTR.		
			E-123	1	1½"×2½"	—	—	—	—	—	—	—	—	—	—			SET @ 380 PSI - 4TH STAGE HTR.		
			E-124	1	2½"	—	—	—	—	—	—	—	—	—	—			CONTROL VAL. - EXTRACTION		~~INGALLS CODE 14-04800-012~~
			E-125	1	6"	—	—	—	—	—	—	—	—	—	—			-EXH. STM. DUMP		
			E-126	1	1"	—	—	—	—	—	—	—	—	—	—			REGULATOR - H.W. HTR. TEMP.		~~INGALLS CODE 14 ITEM 1~~
			E-127	1	1½"	—	—	—	—	—	—	—	—	—	—			CARGO OIL H.W. HTR.		~~INGALLS CODE 14 ITEM 6~~
		6	E-128	6	¾"			150#	—	FORGED STEEL	A105 GR II	STNS. STL.	STNS. STL.	STNS. STL.	—			GLOBE - BOLTED BONNET	NOS. 4,90-93	LUNK'NH'M'R. FIG. 1710-MOD
			E-129	1	1"										—				4,90-93	1710-MOD
		4	E-130	2	¾"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCRD.	B2.1	GLOBE	1,90-93	POWELL FIG. 110
			E-131	1	¾"			200#	—	BRONZE	B61	BRONZE	BRONZE	—	MONEL	SCRD.	B2.1	SWING CHECK, SCRD. CAP	90-93	LUNK'NH'M'R. FIG. 554-Y
			E-132	1	8"			150#	B16.10	CAST STEEL	A216 GR WCB	STNS. STL.	STNS. STL.	STNS. STL.	—	FLANGED, F&D	B16.5	GATE (W/GLAND WAT. SEAL)	2,3,4,6,14,95,90-93	1502
			E-133	1	6"										—			GLOBE	3,4,6,95,90-93	1542
			E-134	7	1"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1		1,90-93	POWELL FIG. 110
			E-135	1	1"			200#							—				1,90-93	
			E-136	1	¼"			200#		FORGED STEEL	A105 GR II	STNS. STL.	STNS. STL.	STNS. STL.	—			GLOBE STOP CHECK	4,5,90-93	EDWARD FIG. 868
		DEL 5	E-137	8	½"			150#	B16.10	FORGED STEEL	A105 GR II				—	SOCK. WELD	—	GATE SWD. U.B. INSIDE SCREW STEM		VOGT SW5-1855-FB-Ex
		6	E-138	3	1"			200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GATE - RISING STEM	NOS 1,90-93	POWELL FIG. 375
			E-139	1											—	FLANGED, F&D	B16.5	PRESS. REDUCING - DISTILLING PLANT STANDBY SUPPLY		LESLIE DL-B
			E-140	1				150#										RELIEF SET @ 8 PSI	ORD. ON REF #3	SV-16
			E-141	1	5"			150#	B16.10	CAST STEEL	A216 GR WCB	STNS. STL.	STNS. STL.	STNS. STL.	—			GATE	NOS 2,4,6,90-93	LUNKENHEIMER FIG 1502
			E-142	2	4"			150#	B16.10	CAST STEEL	A216 GR WCB	STNS. STL.	STNS. STL.	STNS. STL.	—			GLOBE	4,6,90-93	1542
		4	E-143	5	⅜"			200#	—	BRONZE	B-61	BRZ	BRZ	BRZ	—	SCR'D.	B2.1		4,5,90-93	POWELL FIG #110
		4	E-144	1	1½"			200#	—	BRONZE	B-61	BRZ	BRZ	BRZ	—	SCR'D.	B2.1			
		5	E-145	2	½"													GLOBE STOP CHECK	1,90-93	#110 MOD
		5	E-146		¾"			—		STN. STEEL	—	—	—	—		SCR'D.		SOLENOID VALVE	——	R.F. LAWRENCE CO. DWG. 3600-A
		6	E-147	1	1"			200#		BRONZE	B-61	BRZ	BRZ	BRZ				GLOBE, STOP-CHECK	NOS. 1,90-93	POWELL FIG. 134
		7	E-148							BRASS	B283					SCR'D	B2.1	SOLENOID VLV.	96	ASCO FIG 8302PETR
		7	E-149					200#		BRONZE	B61	BRZ	BRZ	BRZ		INLET SCRD. OUTLET HOSE THRD.	B2.1 / B2.4	GLOBE HOSE VLV. W/CAP & CHAIN	1,39,90-93	POWELL FIG. 110 H
		7	E-150					150#		FORGED STL.	A105	STN	STN	STN		FLANGED	B16.5	GLOBE VLV. BOLTED BONNET	4,90-93	LUNK'NH'M'R FIG. 1710 MOD

GENERAL NOTES

1-DESIGNATIONS "LOCKED CLOSED" OR "LOCKED OPEN" ARE LISTED FOR YARD/TECHNICAL INFORMATION ONLY-NOT FOR ORDERING PURPOSES. LOCKS AND LOCATIONS ARE PROVIDED ON REF. #2

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	2-9-77		1. ADDED E-22 AS PER DESIGN DEVELOPMENT 2. REVISED ASTM SPEC. OF PIPE E-1 TO ALLOW YARD FABRICATION	G.L.W. B.R.I.	
2	5-20-77		1-APPLIED SP'L. NOTE #96 TO VALVE E-114 IN LIEU OF NOTES 4,6,13,95,90-93; CHANGED MFG. FROM LUNKENHEIMER CO. TO PENCO 2-ADDED SP'L. NOTES 86 & 75 TO VALVE E-118. 3. REVISED QTY OF E-1 FROM 6'-0" TO 20'-0"; E-16 FROM 4'-0" TO 15'-0". 4. ADDED E-138 THRU E-142	PCG	G.G. SHARP LTR. DATED 7-14-77
3	6-17-77		1. REVISED SERVICE DESCRIPTION OF PIPE E-2 TO READ L.P. EXTRACTION STM TO COMPLY WITH COMMENT IN G.G. SHARP LTR OF APPROVAL DATED MAY 19, 1977 FILE 5587/S4B-10 2. SERVICE DESC. OF PIPE E-8 TO READ "CARGO COIL HTR. 3. ADDED E-23 TO E-31 ESCAPE PIPING 4. REVISED QTY OF E-1 FROM 20' TO 10'	AG	G.G. SHARP LTR. DATED 8-17-77
4	10-6-77	2 2 2 2	1-INCR. QTY OF: E6 (80'-100'), E8 (100'-120'), E-10 (55'-80'), E19 (15'-20'), E-25 (94'-220') & E26 (120'-140'). 2-DELETED E-18 & E-130 3-ADDED E-32, E-33, E-34, E-143 & E-144 4-FOR E114, CORRECTED THE MFG. TO READ "PENCO" 5-FOR E120, CHG'D THE SIZE (4"×6" TO 6"×8")	PCC	
5	12/14/77	ALL	1-INCREASED PIPE E-5 FROM 30'-0" TO 100'-0", PIPE E-8 " 120'-0" TO 140'-0", PIPE E-12 " 80'-0" TO 100'-0" 2-ADDED VALVE NOS. E-145 & E-146 TO LIST. 3-DELETE VALVE NOS. E-137 FROM LIST.	F.J.D.	
6	2-23-78		1. ADDED E-147. 2. INCREASED THE QTY FOR: E-12 (100' TO 112'), E-17 (1' TO 40'), E-25 (220' TO 231'), E-138 (2 TO 3).	RHW	
7	6/30/78		1-REVISED DESIGN CRITERIA FOR AUX EXHAUST MN. & L.P. SERV. STEAM TO AGREE W/PIPING DIA. M4650-111-20-13 ALT 2ND. 2-INCR. QTY OF E-12 (112'-132') & E-26 (140'-180'), E6 (100'-104') 3-ADDED VLVS E-148 THRU E-150.	PCG	7/6/78

HULL	DESIGN	CHARGE
4651		8450
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DRAWN G.G.K.
TRACED
CHECKED
DATE
APPROVED
APPROVED
APPROVED

PLAN NO. M-4650-371-04-1
ALT. NO. 7

PIPE & VALVE LIST
FOR
AUX. EXHAUST, L.P. BLEEDER
STEAM AND ESCAPE PIPING

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

REFERENCE PLANS

NO.	PLAN NO.	TITLE
3	M4650-111-13	SCHEDULE OF SAFETY & RELIEF VALVES
2	M4650-372-2	ENGINEERS LOCK LIST
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

ALTERATION
DATE OF ISSUE
ENGINEERING DISTRIBUTION
OWNERS
AMERICAN BUREAU
LLOYD'S R.S.
U.S.M.A.
U.S. NAVY
U.S.C.G.
JOINER CONT'R
OWNER'S INSP
AM. BU. INSP
LLOYD'S INSP
U.S.M.A. INSP
U.S. NAVY INSP
U.S.C.G. INSP
HULL DRAFT - 21
MACH. DRAFT - 22
ELEC. DRAFT - 23
OUTFIT DRAFT - 25
ESTIMATING
PRODUCTION (BCO)
ORDER DEPT
JOINER CONT'R
TOTAL ENG'R DIST
YARD DISTRIBUTION
GROUND ASSEMBLY
NO. WAY
NO. WAY
NO. WAY
NO. WAY
STRUCT. SUPER
OPTICAL DETAIL
WET DOCK
PIPE SHOP - 52
PIPE DRAFT - 52
BOILER SHOP - 55
OUTSIDE MACH. - 60
ELECTRIC SHOP - 70
SHEET METAL SHOP - 74
COPPER SHOP - 51
PAINT SHOP - 75
WELDING
MOLD LOFT - 41
BRACKET SHOP
TOTAL YARD DIST

SQ. FT.

M-705

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-1

FRAME 2 OF 2

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF PIPES

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	GALV.	TOTAL	SIZE	SCH NO.	WALL THK	DESIGN CRITERIA P.S.I.	°F	ANSI DIM. STD	DESCRIPTION	A.S.T.M. SPEC.	
*				2,3	E-1	10'-0"		10'-0"	36"	10	.312	1-PSIA	102	B36.10	PIPE WELDED STEEL	A285 GR.B	MAIN TURBO GENER
504444				3	E-2	8'-0"		8'-0"	12"	40	.406	12.5	204		SEAMLESS STL.	A106 GR.B	1ST L.P. EXTRACTION
				7'	E-3	105'-0"		105'-0"	10"		.365	48	480			A53 TY.S GR.B	EXHAUST STEAM TO
				7'	E-4	50'-0"		50'-0"	8"		.322	48	480				EXHAUST STEAM - D.C
	504444-B			5,7'	E-5	100'-0"		100'-0"	6"		.280	48	480				EXH. FROM MN. FD. PUMP
	504444-F	504444-J		4,7'	E-6	104'-0"		100'-0"	5"		.258	68	480				D.C. HTR. - 3RD STAGE HT
				7'	E-7	85'-0"		85'-0"	4"		.237	48	296				DISTILL. PLANT STAN
	504444-E	504444-B		4,5	E-8	140'-0"		140'-0"	4"		.237	360	755			A106-GR.B	H.P. EXTRACT. TO 4
				7'	E-9	50'-0"		50'-0"	3"		.216	48	296		SEAMLESS	A53 TY.S GR.B	STM. TO HTG. SYS. & CA
	504444-F			4,7'	E-10	80'-0"		80'-0"	2½"		.203	48	480				STM. TO F.O. SERV. TK
				7'	E-11	245'-0"		245'-0"	2"		.154	48	480			A106-GR.B	STM. TO PES F.O. HTG
	504444-G	504444-J		5,6,7'	E-12	182'-0"		182'-0"	1"		.133	48	480				STM. TO GARBAGE DISP
				7'	E-13	10'-0"		10'-0"	¾"		.113	48	296				STM. HDR. DRAINS
				7'	E-14	2'-0"		2'-0"	½"		.109	48	296				STM. TRAPS BY-PASS @
				7'	E-15	125'-0"		125'-0"	½"		.109	48	296		SEAMLESS STL.	A106 GR.B	GAGE BRANCHES @ ST
	504444-B			2,7'	E-16	15'-0"		15'-0"	¾"		.113	48	296				STM. TO F.O. TRANSF
	504444-H			6,7'	E-17	40'-0"		40'-0"	½"		.109	48	296				GAGE BRANCHES @ 3
				4	E-18	14'-0"		14'-0"	3/8"		.091	48	292				HEADER DRAINS
504444	504444-F			4,7'	E-19	20'-0"		20'-0"	1½"		.145	48	296				3RD & 4TH STAGE SA
COPPER SHOP					E-20	10'-0"		10'-0"	¼" O.D.	—	.035	—	—	—	COPPER TUBE - SMLS.	B75-ALLOY 122	SENSING LINES - PIL
504444				7'	E-21	25'-0"		25'-0"	¼"	40	.088	48	296	B36.10	PIPE SEAMLESS STEEL	A106 GR.B	L.P. SERV. STEAM
504444-A				1	E-22	100'-0"	—	100'-0"	28"	10	.312				WELDED STEEL PIPE	SEE NOTES	DIESEL GENERATOR EXHAUS
504444-C				3	E-23	200'-0"		200'-0"	16"	20	.312				SEAMLESS STEEL	A53 TY.S GR.B	ESCAPE
				3	E-24	10'-0"		10'-0"	10"	40	.365						
	504444-F			3,4,6	E-25	231'-0"		231'-0"	8"		.322						
	504444-F	504444-J		3,4,7'	E-26	180'-0"		180'-0"	6"		.280						
				3	E-27	55'-0"		55'-0"	4"		.237				CARBON STEEL PIPE	A53 TY.E OR S GR.B	
				3	E-28	150'-0"			3"		.216						
				3	E-29	10'-0"			2"		.154						
				3	E-30	160'-0"			1"		.133						
				3	E-31	210'-0"			½"		.109						
504444-F				4,7'	E-32	20'-0"		20'-0"	½"	80		48	296	B36.10	PIPE SMLS STEEL	A-106 GR-B	STRN'R BLOW DOWN
504444-F				4	E-33	60'-0"		60'-0"	½"	40				B36.19	SMLS STN. ST'L PIPE	A-312 GR.316	ACTUATING LINE FOR PIL
504444-F				4	E-34	60'-0"		60'-0"	12"	20				B36.10	PIPE SMLS STEEL	A-53 TY.S GR.B	ESCAPE

LIST OF VALVES

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	°F	PRESS STD	ANSI DIM. STD	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	DISC	STEM	PIN WHERE REQ'D	END TYPE	ANSI DIM STD	
504400					E-100	1	36"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS. STL.	STNS. STL.	STNS. STL.	—	FLGD. F&D	B16.5	GATE
504400-C					E-101	1	12"					CAST STEEL	A216 GR.WCB				—			GATE
				4	E-102	1	10"										—			
					E-103	1	4"										—			GATE
					E-104	2	2"										—			GLOB
					E-105	1	5"										—			
					E-106	5	3"										—			
					E-107	2	2½"										—			
					E-108	5	1"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GLOB
					E-109	2	¾"				—						—			
					E-110	9	½"				—						—			
					E-111	13	½"			600#	B16.10	FORGED STEEL	A 105 GR.II	STNS. STL.	STNS. STL.	STNS. STL.	—	FLGD. F&D	B16.5	
					E-112	1	½"										—			
504400-B	—	—			E-113	1	10"			150#	—	CAST STEEL	A216 GR.WCB				—	FLANGED, F&D	B16.5	CHECK
503300-D				2,4	E-114	2	6"				—						—			GLOB
504400-C					E-115	1	6"				B16.10						—			GLOB
504400-A	—				E-116	1	5"			300#							—			GLOB
504400-A	—				E-117	1	4"					CAST CHROME-MOLY	A217-GR.WC6				—			
504400-C				2	E-118	1	4"			150#		CAST STEEL	A216-GR.WCB				—			GLOBE
504400-B					E-119	1	12"				—						—			CHECK
—	—			4	E-120	1	6"x8"	—	—	—	—	—	—	—	—	—	—	FLANGED, F&D	B16.5	RELIE
—	—				E-121	1	3"x4"	—	—	—	—	—	—	—	—	—	—			
—	—				E-122	1	1½"x2"	—	—	—	—	—	—	—	—	—	—			
—	—				E-123	1	1½"x2½"	—	—	—	—	—	—	—	—	—	—			
—	—				E-124	1	2½"	—	—	—	—	—	—	—	—	—	—			CONT
—	—				E-125	1	6"	—	—	—	—	—	—	—	—	—	—			
—	—				E-126	1	1"	—	—	—	—	—	—	—	—	—	—			REGU
—	—				E-127	1	1½"	—	—	—	—	—	—	—	—	—	—			
504400-C					E-128	6	¾"			150#	—	FORGED STEEL	A105 GR.II	STNS. STL.	STNS. STL.	STNS. STL.	—			GLOB
					E-129	1	1"				—						—			
				4	E-130	2	3/8"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCRD.	B2.1	GLOB
504400-C					E-131	1	¾"			200#	—	BRONZE	B61	BRONZE	BRONZE	—	MONEL	SCRD.	B2.1	SWING
					E-132	1	8"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS. STL.	STNS. STL.	STNS. STL.	—	FLANGED, F&D	B16.5	GATE
					E-133	1	8"										—			GLOB
					E-134	7	1"			200#	—	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	
					E-135	1	1"			200#	—						—			
					E-136	1	¼"			600#	—	FORGED STEEL	A105 GR.II	STNS. STL.	STNS. STL.	STNS. STL.	—			GLOBE
				REF. 5	E-137	2	½"			150#	B16.10	FORGED STEEL	A105 GR.II				—	SOCK WELD	—	GATE
504400-D	504400-G			2,6	E-138	3	1"			200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED.	B2.1	GATE
500020				2	E-139	1	2½"			—	—	—	—	—	—	—	—	FLANGED, F&D	B16.5	PRESS
—	—	—		2	E-140	1	4"x6"			150#	—	—	—	—	—	—	—			RELIEF
504400-D				2	E-141	1	5"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS STL	STNS STL	STNS STL	—			GATE
504400-D				2	E-142	2	4"			150#	B16.10	CAST STEEL	A216 GR.WCB	STNS STL	STNS STL	STNS STL	—			GLOBE
SUPPLY				4	E-143	2	¼"	—	—	200#	—	BRONZE	B-61	BRZ	BRZ	BRZ	—	SCR'D.	B2.1	
				4	E-144	1	1½"	—	—	200#	—	BRONZE	B-61	BRZ	BRZ	BRZ	—	SCR'D.	B2.1	
504400-F				5	E-145	2	½"				—									GLOB
500076-A	500076-A	—	—	5	E-146	2	¼"			—	—	STN. STEEL	—	—	—	—		SCR'D.		SOLE
504400-G				6	E-147	1	1"			200#	—	BRONZE	B-61	BRZ	BRZ	BRZ				GLOB
504400-H				7²	E-148	1	3/8"					BRASS	B283					SCR'D	B2.1	SOLE
504400-J				7³	E-149	1	1"			200#		BRONZE	B61	BRZ	BRZ	BRZ		INLET SWEAT OUTLET [illegible]	B2.1 / B2.4	GLOBE
				7³	E-150	1	1"			150#		FORGED ST'L	A105	STN	STN	STN		FLANGED	B16.5	GLOB

LIST OF FLANGES

REQUISITION NO.	ALT NO.	FLANGE IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD	MATERIAL	ASTM SPEC	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
[illegible]		E-200	2	36"			SERVICE	125#	—	FORGED STL	A105	SLIP-ON FLANGE F&D RAISED FACE	MAIN TURBINE GENERATOR EXHAUST		NOTES 154, 90-93	TUBE TURN PT.# 711
		E-201	9	12"				150#	B16.5				STAND-BY TURBINE GEN EXH - 1st STAGE FD. HTR		NOTES 90-93	#50
[illegible]	4,5	E-202	13	10"									AUX. EXH.			
[illegible]	2,3,5,6	E-203	13	8"									EXH.			
[illegible]	5,6	E-204	15	6"									AUX STM. - MAIN FEED PUMP			
[illegible]	2,3,4	E-205	8	5"												
[illegible]	2,3,4	E-206	25	4"									EXH. STM -			
[illegible]	4,7	E-207	14	3"									- CARGO COIL HTR			
		E-208	6	2½"								SOCK WELD BORE FOR SCH. 40	- F.O. SERV. TK. MANIFOLD			#150
[illegible]	4,5	E-209	9	5"				300#				WELD NECK FLANGE BORE FOR SCH. 40	- 3RD STG HTR			#31
[illegible]	4,5	E-210	12	4"									- 4TH			#31
		E-211	1	4"				600#					- MAIN FD PUMP			#33
		E-212	1	3"									-			#33
[illegible]	4,5	E-213	6	2"				150#				SOCKET-WELD FLANGE BORE FOR SCH. 40	AUX EXH - FO. HTRS			#150
		E-214	2	1½"									SAFETY VALVE			
		E-215	2	1"									ATMOSPHERIC EXH. STM.			
		E-216	4	10"								SLIP-ON FLANGE	ESCAPE AND BOILER BLOW			#50
[illegible]	6	E-217	7	8"												
[illegible]	4	E-218	11	6"												
		E-219	6	4"												
		E-220	8	3"												
		E-221	6	2"								SOCKET-WELD FLANGE BORE FOR SCH. 40				#150
		E-222	6	1"												#150
[illegible]	1	E-223	1	24"								SLIP-ON FLANGE F&D	DIESEL GEN. EXHAUST			#50
[illegible]	1,4,6	E-224	12	18"				125#							NOTES 147, 90-93	#711
[illegible]	1	E-225	4	1"				600#				SOCKET-WELD FLANGE BORE FOR SCH. 40 PIPE			90-93	#152
[illegible]	2,3,4	E-226	12	2½"				150#				SLIP ON WELD				# 50
	2	E-227	2	1½"				300#				SLIP-ON FLANGE				#51
[illegible]	3	E-228	1	36"				125#	—			FLAT FACE	TURBO GEN EXHAUST		154, 90-93	TUBE TURN PT.# 711
[illegible]	3,4,5	E-229	1	2'-3⅝" x 4'-7⅞"				—		STEEL	A285-GR.B	M/F 61.2# (1½" THK) STL F.B. 3" x 1½" x 20'-0"				DET. 4-A REF. #4
[illegible]	3,4	E-230	2	42"OD x 28¼" I.D.						STEEL	ABS GR. A	SPEC. FL'G 42"OD x 28¼" I.D. x 2" THK. WITH 20-1⅝" HOLE ON 39½" B.C. SEE DET 18-D ON REF #5	DSL. GEN. EXH. PIPE ANCHOR			
[illegible]	4	E-231	2	5"				300#	B16.5	FORGED STL	A-105	SLIP-ON FL'G F&D			NOTES 90-93	TUBE TURN PT.# 51
[illegible]	4	E-232	2	1½"				300#				LAP JOINT FLG F&D				111
[illegible]	4	E-233	4	½"				150#				S.W. FL'G BORE FOR SCH. 40				150
[illegible]	4	E-234	1	6"				300#	B16.5			SLIP-ON WELD FLANGE F&D				TUBE TURN PT. #51
[illegible]	4	E-235	1	3"				600#				WELD NECK LARGE FEMALE FL'G F&D				TUBE TURN
[illegible]	7	E-236	1	10"				600#	B16.5			WELD NECK FL'G F&D RAISED FACE, BORE FOR SCH 40				33

LIST OF GASKETS

REQUISITION NO.	ALT NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD	MATERIAL	ASTM SPEC	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
[illegible]		E-300	4	36"			SERVICE	125#	—	ASBESTOS COMP	D1100R PI&IA	GASKET - ⅛" THICK RING TYPE			SEE NOTE 154 REF. 1	JOHN MANVILLE #60
		E-301	9	12"				150#	[illegible]							
[illegible]	4,5,7	E-302	11	10"						STNLS STL	TYPE 304	SPIRAL WOUND FLEXITALLIC-STYLE "CG" ST'L OUT'R RING W/ ASBESTOS FILLER				
[illegible]	2,3,5	E-303	12	8"												
	1	E-304	16	6"												
[illegible]	2,3,4,8	E-305	7	5"												
[illegible]	3,4,5	E-306	20	4"												
		E-307	18	3"					B16.21	ASBESTOS COMP	D1100R PI&IA	GASKET - ⅛" THK RING TYPE				JOHN MANVILLE #60
	3,5	E-308	11	2½"												
		E-309	10	2"												
		E-310	2	1½"												
		E-311	8	1"												
[illegible]	1,2,8	E-312	6	5"				300#	—	STAINLESS STL	TYPE 347	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - STEEL OUTER RING	WITH ASBESTOS FILLER			
	1	E-313	8	4"				600#	—							
	1	E-314	1	3"				600#	—							
[illegible]	1,5	E-315	3	24"				150#	—		TYPE 304	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - STEEL OUTER RING	WITH ASBESTOS FILLER			
[illegible]	1,5,6	E-316	10	18"					—						SEE NOTE 147 REF. 1	
[illegible]	5,6	E-317	9	4"				300#	—		TYPE 347					
	2	E-318	3	1"				600#								
[illegible]	4	E-319	4	½"				300#			TYPE 304					
	4	E-320	2	6"				150#	B16.21	ASBESTOS COMP	D1100R PI&IA	GASKET - ⅛" THK RING TYPE				JOHN MANVILLE #60
	4	E-321	1	3"				300#	—	STAINLESS STL	TYPE 347	SPIRAL WOUND FLEXITALLIC STYLE "CG" ST'L OUT'R RING	W/ ASBESTOS FILLER			
	4	E-322	4	10"				150#	B16.21	ASBESTOS COMP	D1100R PI&IA	GASKET - ⅛" THK RING TYPE				
	4	E-323	4	8"												
	4	E-324	3	6"												
	4	E-325	2	4"												
[illegible]	4	E-326	8	42"x28¼"								FULL FACE	TO SUIT E-230			
[illegible]	8	E-327	4	3"				600#	—	STAINLESS STL	TYPE 304	SPIRAL WOUND GASKET FOR LARGE MALE & FEMALE FL'GS.			FLEX. STYLE R-1	FLEXITALLIC No. R1-51

LIST OF STUDS, BOLTS & NUTS

(2) FOR EACH STUD

REQUISITION NO.	ALT NO.	BOLTING IDENT NO.	AMT REQ'D	STUDS MATERIAL ASTM	STUDS DIA	STUDS LGTH	STUDS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA	BOLTS LGTH	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	SERVICE	CODE NO.	REMARKS
[illegible]		E-400	128								45	480°	CARBON STL A193 GR B7 HVY. HEX. HD.	1⅛"	7"	B18.2.1 B1.1 UNC-2A	CARBON STL A194 GR 2H HVY HEX SEMI-FINISHED	1⅛"	B18.2.2 B1.1 UNC-2B	36" FLG & VALVES		
		E-401	72											⅞"	4"			⅞"		12"		
[illegible]	4,5	E-402	156											⅞"	3¾"			⅞"		10" & EXP. JOINTS		
[illegible]	4,5	E-403	96											¾"	3½"			¾"		8"		
[illegible]	5	E-404	144											¾"	3¼"			¾"		6" VALVES		
[illegible]	3,4	E-405	56											¾"	3⅛"			¾"		5" & VALVES		
[illegible]	3,4	E-406	176											⅝"	3"			⅝"		4"		
[illegible]	4	E-407	122											⅝"	2½"			⅝"		3", 2½" FLG & VALVES		
		E-408	40											⅝"	2¼"			⅝"		2"		
		E-409	8											½"	2"			½"		1½"		
		E-410	8											½"	1¾"			½"		1"		
[illegible]	4,5	E-411	48											¾"	4"			¾"		5"-300# FLG		
[illegible]	4,5	E-412	80											¾"	3¾"			¾"		4" & 8" 150# FLG W/ORIFICE		
[illegible]		E-413	8	CARBON STL A193 GR B7	⅞"	5¼"	B18.2.1 B1.1 UNC-2A	CARBON STL A194 GR 2H HVY HEX SEMI-FINISHED	⅞"	B18.2.2 B1.1 UNC-2B	360	750°								4"-600#		
[illegible]	4	E-414	16		¾"	4½"			¾"											3"		
[illegible]	1,4,8	E-415	244										A307 GR B	1⅛"	5¾"	B18.2.1 B1.1 UNC-2A	A307 GR B	1⅛"	B18.2.2 B1.1 UNC-2B	24"-150#		
[illegible]	2	E-416	12		½"	3"			½"		360	750°								½"-600#		
	2	E-417	16		½"	2½"														½"-300#		
[illegible]	4	E-418	8										A307 GR B	½"	2¼"	B18.2.1 B1.1 UNC-2A	A-307 GR B	½"	B18.2.2 B1.1 UNC-2B	½"-150#		
[illegible]	4	E-419	16										CARBON STL A193 GR B7 HVY HEX HD	¾"	4¼"		CARB STL A194 GR 2H HVY HEX SEMI FINISHED	¾"		6"-300#		
	4	E-420	40											1"	4¼"			1"		FOR E-230		
	8	E-421	56										A307 GR.B	1¼"	4½"	B18.1 B1-1 UNC 2-A	A307 GR.B	1¼"	B18.2.2 B1.1 UNC-2B	28"-125#		

[illegible] FOR THIS ITEM HAS BEEN ORDERED

UAO 50134

REFERENCE PLANS

NO.	PLAN NO.	TITLE
5	4650-111-27	ARRG'T OF PIP'G, ENGINE CASING MODULE #13
4	4650-111-16	LOWER LEV. PORT SIDE FWD. MODULE #2
3	4650-371-04-3	FITTING LIST
2	4650-371-04-1	PIPE & VLV. LIST AUX. EXH., L.P. BLEEDER STM. & ESC. PIPING
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	2-9-77 4-11-77		1. ADDED E-223, E-224, E-315, E-316, E-415 AS PER DESIGN DEVELOPMENT 2. E-223 & E-224 CHG'D FROM FLAT-FACED TO RAISED FACE FLG'S 3. E-315 & E-316 CHG'D TO STYLE "CG" FROM STYLE "D".	GLW PCG	[illegible]
2	4-8-77 4-26-77 5-11-77		1. ADDED E-317, E-318, E-416 & E-417. 2. ADDED ASTM SPEC. FOR E-312, E-313 & E-314 3. ADDED PC# E-226 4. ADDED PC# E-227 5. REVISED QTY OF E-203 (WAS 4), E-205 (WAS 3), E-206 (WAS 4), E-305 (WAS 2).	GLW RL SECC	[illegible] DATED 3-15-77
3	6-17-77		1. REVISED QTY. OF FOLLOWING: E-200 (WAS 1) E-202 (WAS 7) E-203 (WAS 6) E-205 (WAS 4) E-206 (WAS 10) E-226 (WAS 1) E-303 (WAS 6) E-305 (WAS 3) E-306 (WAS 7) E-308 (WAS 5) E-405 (WAS 24) E-406 (WAS 56) 2. ADDED E-228, E229 & E230	AG	[illegible] DATED 9-11-77
4	10-6-77	2 2 2 2 1	1- INCR THE QTY OF: E-202 (9-12), E-205 (5-8), E-206 (19-25), E-207 (12-15), E-209 (3-7), E-210 (5-11), E-213 (4-5), E-218 (10-11), E-224 (6-10), E-226 (10-12), E-312 (2-5), E-402 (72-144), E-403 (48-80), E-405 (32-56), E-406 (128-136), E-407 (100-122), E-411 (16-40), E-412 (32-72), E-414 (8-16), E-415 (152-272) 2- ADDED ITEM NOS. E-231 TO E-235, E-319 TO E-326 & E-411 TO E420. 3- CHANGED THE COMPLETE DESCR OF E-230 & E-302 TO E-306 4- CHANGED THE SIZE OF E-229 TO 2'-3⅝" x 4'-7⅞" & E-405 (LENGTH) TO 3⅛" 5- ADDED REF #5	PCG	[illegible]
5	12/16/77	ALL	1- REMOVE RESERVATION FROM E-229 2- INCREASED E-202 FROM 12 TO 13 E-203 FROM 8 TO 11 E-204 FROM 10 TO 14 E-209 FROM 7 TO 9. E-210 FROM 11 TO 12 E-213 FROM 5 TO 6 3- INCREASED E-302 FROM 7 TO 10 E-303 7 TO 12 E-306 16 TO 20 E-308 9 TO 11 E-315 2 TO 3 E-316 4 TO 9 E-317 7 TO 9 4- INCREASED E-402 FROM 144 TO 156 E-403 80 TO 96 E-404 120 TO 144 E-411 40 TO 48 E-412 72 TO 80	F.J.D.	[illegible]
6	2-23-78		1. INCREASED THE QTY FOR: E-203 (11 TO 13), E-204 (14-15), E-217 (6 TO 7), E-224 (10 TO 12), E-316 (9 TO 10), E-415 (272 TO 300)	RWH	5-1-78
7	6/30/78		1- ADDED ITEM E-236 PER Y.I.S. #4650-22-117 2- INCR QTY OF E-207 (13-14) & E-302 (10-11)	PCG	7-6-78
8	10-4-78 11/14/78		1- ITEM E-415 DECR. FROM 300 TO 244 2- ITEM E-421 ADDED & E-327 ADDED 3- ITEM E-305 INCR. FROM 4 TO 7, AND ITEM E-312 INCR. FROM 5 TO 6 PER Y.I.S. M-4650-22-283 & 22-458	P.G.	8-26-79

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE DATE 12 NOVEMBER 1976
DRAWN E.J.K. APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. 4650-371-04-2 ALT. NO. 8

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR AUX. EXHAUST, L.P. BLEEDER STEAM AND ESCAPE PIPING

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

M-706

DATE OF ISSUE

ALTERATION	1	2	3	4	5	6	7	8	
ENGINEERING DISTRIBUTION									
MAIL: OWNERS									
AMERICAN BUREAU									
LLOYD'S R.S.									
U.S.M.A.									
U.S. NAVY									
U.S.C.G.									
JOINER CONT'R.									
INSPECTION: OWNER'S INSP.									
AM. BU. INSP.									
LLOYD'S INSP.									
U.S.M.A. INSP.									
U.S. NAVY INSP.									
U.S.C.G. INSP.									
OFFICE: HULL DRAFT - 21									
MACH. DRAFT - 22									
ELEC. DRAFT - 23									
OUTFIT DRAFT - 25									
ESTIMATING									
J DOUGHERTY (LTD)									
MISC.: PRODUCTION (BCD)									
ORDER DEPT.									
JOINER CONT'R. YARD									
TOTAL ENG'R. DIST.									
YARD DISTRIBUTION									
YARD: SHIP SUPT.									
PIECE RATE - 11									
TEST DEPARTMENT									
QUALITY ASSURANCE									
STEEL PLANNING									
STRUCTURAL: GROUND ASSEMBLY									
35 DEPT.									
P. McNAIR									
H. LEW									
NO. WAY									
NO. WAY									
NO. WAY									
NO. WAY									
STRUCT SUPER.									
OPTICAL DETAIL - 45									
WET DOCK									
MACH'Y & OUTFIT: PIPE SHOP - 52									
OUTFIT #1 PIER									
PIPE DRAFT - 52									
BOILER SHOP - 58									
OUTSIDE MACH. - 60									
Q. MAT'L									
ELECTRIC SHOP - 70									
SHEET MET. SHOP - 74									
COPPER SHOP - 51									
PAINT SHOP - 75									
OTHER: WELDING									
R. MILLER									
MOLD LOFT - 41									
BRACKET SHOP									
TOTAL YARD DIST.									

4650-51 ALT 2
4650-51 ALT 3
4650-51 ALT 4
4650-51 ALT 5
4650-51 ALT 6
4650-51 ALT 7
ALT 8

SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-2

FRAME 1 OF 2

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SE
504401	504401-C		1	E-200	2	36"			SERVICE	125#	—	FORGED STL	A105	SLIP-ON FLANGE F&D RAISED FACE	MAIN TURBINE GENER
				E-201	6	12"				150#	B16.5				STAND-BY TURBINE GE
	504401-E	504401-E	4,5	E-202	13	10"									AUX. EXH.
	504401-H	504401-E	2,3,5,6	E-203	13	8"									EXH.
	504401-F	504401-H	5,6	E-204	15	6"									AUX STM - MAIN FEED
	504401-B	504401-E	2,3,4	E-205	8	5"									
	504401-B	504401-E	2,3,4	E-206	25	4"									EXH. STM.
	504401-E	504401-N	4,7	E-207	14	3"									CARGO
				E-208	6	2½"								SOCK. WELD BORE FOR SCH. 40	F.O. SERV.
	504401-E	504401-F	4,5	E-209	9	5"				300#				WELD-NECK FLANGE BORE FOR SCH. 40	3RD STG H
	504401-E		4,5	E-210	12	4"									4TH
				E-211	1	4"				600#					MAIN FD
				E-212	1	3"									
	504401-E	504401-F	4,5	E-213	6	2"				150#				SOCKET-WELD FLANGE BORE FOR SCH. 40	AUX EXH - FO. HTR
				E-214	2	1½"									SAFETY VALVE
				E-215	2	1"									ATMOSPHERIC EXH.
				E-216	4	10"								SLIP-ON FLANGE	ESCAPE AND BOILER
	504401-H		6	E-217	7	8"									
	504401-E		4	E-218	11	6"									
				E-219	6	4"									
				E-220	8	3"									
				E-221	6	2"								SOCKET-WELD FLANGE BORE FOR SCH. 40	
				E-222	6	1"									
504401-A			1	E-223	1	24"								SLIP-ON FLANGE F.D.	DIESEL GEN EXHAUST
	504401-E	504401-H	1,4,6	E-224	12	28"				125#					
504401-B			2	E-225	4	1"				600#				SOCKET-WELD FLANGE BORE FOR SCH. 40 PIPE	
	504401-C	504401-E	2,3,4	E-226	12	2½"				150#				SLIP ON WELD	
			2	E-227	2	1½"				300#				SLIP-ON FLANGE	
504401-C			3	E-228	1	36"				125#	—			FLAT FACE	TURBO GEN EXHA
*			3,4,5	E-229	1	2'-3¼" x 4'-7¼"				—		STEEL	A285-GR.B	M/F 61.2# (1½" THK) STL F.B.	
[illegible]-50134	*		3,4	E-230	2	42" OD x 28¼" I.D.						STEEL	ABS GR. A	SPEC. FL'G 42" OD X 28¼" I.D. X ½" THK. WITH 20-1⅛" HOLE ON 39½" B.C.	DSL. GEN. EXH. PIPE
504401-E			4	E-231	2	½"				300#	B16.5	FORGED STL	A-105	SLIP-ON FL'G. F&D	
504401-E			4	E-232	2	½"				300#				LAP JOINT FLG F&D	
504401-E			4	E-233	4	½"				150#				S.W. FL'G BORE FOR SCH. 40	
504401-E			4	E-234	1	6"				300#	B16.5			SLIP-ON WELD FLANGE F&D	
504401-E			4	E-235	1	3"				600#				WELD NECK LARGE FEMALE FL'G. F&D.	
504401-J			7	E-236	1	10"				600#	B16.5			WELD NECK FL'G F&D RAISED FACE, BORE FOR SCH 40	

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SE
504424				E-300	4	36"			SERVICE	125#	—	ASBESTOS COMP	DIN7OGR.PIN4A	GASKET - ⅛" THICK RING TYPE	
SUPPLY				E-301	6	12"				150#	B16.21				
504424-C	504424-B		4,5,7	E-302	11	10"						STNLS ST'L	TYPE 304	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - ST'L OUT'R RING	W/ ASBESTOS FIL
			3,4,5	E-303	12	8"									
			4	E-304	16	6"									
	504424-J		2,3,4,8	E-305	7	5"									
	504424-D		3,4,5	E-306	20	4"									
SUPPLY				E-307	18	3"					B16.21	ASBESTOS COMP	DIN7OGR.PIN4A	GASKET - ⅛" THK RING TYPE	
			3,5	E-308	11	2½"									
				E-309	10	2"									
				E-310	2	1½"									
				E-311	8	1"									
504424-B	504424-C	504424-J	2,4,8	E-312	6	5"				300#	—	STAINLESS STL	TYPE 347	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - STEEL OUTER RING	WITH ASBESTOS FILLER
			2	E-313	5	4"				600#	—				
			2	E-314	1	3"				600#	—				
504424-A	504424-D		1,5	E-315	3	24"				150#	—		TYPE 304	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - STEEL OUTER RING	WITH ASBESTOS FILLER
		504424-E	1,5,6	E-316	10	28"					—				
504424-B			2,6	E-317	9	4"				300#	—		TYPE 347		
			2	E-318	3	1"				600#					
504424-C			4	E-319	4	½"				300#			TYPE 304		
SUPPLY			4	E-320	2	½"				150#	B16.21	ASBESTOS COMP	DIN7OGR.PIN4A	GASKET - ⅛" THK RING TYPE	
504424-C			4	E-321	1	6"				300#	—	STAINLESS ST'L	TYPE 347	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - ST'L OUT'R RING	W/ ASBESTOS FILLER
SUPPLY			4	E-322	4	10"				150#	B16.21	ASBESTOS COMP	DIN7OGR.PIN4A	GASKET - ⅛" THK RING TYPE	
SUPPLY			4	E-323	2	8"									
SUPPLY			4	E-324	7	6"									
SUPPLY			4	E-325	2	4"									
504424-C			4	E-326	8	42"x28¼				—	—			FULL FACE	TO SUIT E-230
504424-N			8	E-327	4	3"				600#	—	STAINLESS STL	TYPE 304	SPIRAL WOUND GASKET FOR LARGE MALE & FEMALE FLGS.	

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO.	BOLTING IDENT NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD.	NUTS (2) FOR EACH STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD.	
504430				E-400	128								45	480°	CARBON STL A193 GR B7 HVY. HEX. HD.	1½"	7"	B18.2.1 B1.1 UNC-2A	CARBON STL A194 SYM-2H HVY HEX SEMI-FINISHED	1½"	B18.2.2 B1.1 UNC-2B	36"
				E-401	72											⅞"	4"			⅞"		12"
	504430-C	504430-D	4,5	E-402	156											⅞"	3¾"			⅞"		10"
	504430-C		4,5	E-403	96											¾"	3½"			¾"		8"
			5	E-404	144											¾"	3¼"			¾"		6"
	504430-C		3,4	E-405	56											¾"	3¼"			¾"		5"
	504430-B	504430-C	3,4	E-406	176											⅝"	3"			⅝"		4"
	504430-C		4	E-407	122											⅝"	2½"			⅝"		3½"
				E-408	40											⅝"	2¼"			⅝"		2"
				E-409	8											½"	2"			½"		1½"
				E-410	8											½"	1¾"			½"		1"
	504430-C	504430-D	4,5	E-411	48											¾"	4"			¾"		5"
	504430-C		4,5	E-412	80											¾"	3¾"			¾"		4"
504429	504430			E-413	8	CARBON STL A193 GR B7	⅞"	5½"	B18.2.1 B1.1 UNC-2A	CARBON STL A194 SYM-2H HVY HEX SEMI-FINISHED	⅞"	B18.2.2 B1.1 UNC-2B	360	755°								4"
	504430	504429-B	4	E-414	16		¾"	4¾"			¾"											3"
504430-A	504430-C	[illegible]	1,4,6,8	E-415	244										A 307 GR. B	1⅛"	5¼"	[illegible]	A 307 GR. B	1⅛"	[illegible]	24"
504429-A			2	E-416	12		½"	3"			½"		360	755								
			4	E-417	16		½"	2½"														
SUPPLY			4	E-418	8										A307 GR. B	½"	2¼"	B18.2.1 B1.1 UNC-2A	A307 GR. B	½"	B18.2.2 B1.1 UNC-2B	
504430-C			4	E-419	12										CARBON STL A193 GR B7 HVY HEX HD	¾"	4¼"		CARB. STL A194 SYM-2H HVY HEX SEMI FINISHED	¾"		
504430-C			4	E-420	40											1"	4¼"			1"		
SUPPLY			8	E-421	56										A307 GR.B	1¼	4½"	B18.1 B1.1 UNC 2A	A307 GR.B	1¼	B18.2.2 B1.1 UNC 2B	28"-12

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-2

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-2

FRAME 1 OF 2

LIST OF FLANGES

REQUISITION NO.	ALT NO.	FLANGE IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD.	MATERIAL	ASTM SPEC	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
		E-200	3	36"			SERVICE	125#	—	FORGED STL	A105	SLIP-ON FLANGE F&D RAISED FACE	MAIN TURBINE GENERATOR EXHAUST		NOTES 154, 90-93	TUBE TURN PT.# 711
		E-201	6	12"				150#	B16.5				STAND-BY TURBINE GEN EXH - 1ST STAGE F.D. HTR		NOTES 90-93	#50
	4,5	E-202	13	10"									AUX. EXH.			
	2,3,5,6	E-203	13	8"									EXH.			
	5	E-204	15	6"									AUX. STM. - MAIN FEED PUMP			
	2,4	E-205	8	5"												
	2,4	E-206	25	4"									EXH. STM. -			
	4,7	E-207	14	3"									- CARGO COIL HTR			
		E-208	6	2½"								SOCK WELD BORE FOR SCH. 40	- F.O. SERV. TK MANIFOLD			#150
	4,5	E-209	9	5"				300#				WELD NECK FLANGE BORE FOR SCH. 40	- 3RD STG HTR			#31
	4,5	E-210	12	4"									- 4TH			#31
		E-211	1	4"				600#					- MAIN F.D. PUMP			#33
		E-212	1	3"									-			#33
	4,5	E-213	6	2"				150#				SOCKET-WELD FLANGE BORE FOR SCH. 40	AUX. EXH. - F.D. HTRS			#150
		E-214	2	1½"									SAFETY VALVE			
		E-215	2	1"									ATMOSPHERIC EXH. STM.			
		E-216	4	10"								SLIP-ON FLANGE	ESCAPE AND BOILER BLOW			#50
	6	E-217	7	8"												
	4	E-218	11	6"												
		E-219	6	4"												
		E-220	8	3"												
		E-221	6	2"								SOCKET-WELD FLANGE BORE FOR SCH. 40				#150
		E-222	6	1"												#150
	1	E-223	1	24"								SLIP-ON FLANGE F&D	DIESEL GEN. EXHAUST			#50
	1,4,6	E-224	12	28"				125#							NOTES 147, 90-93	#711
	2	E-225	4	1"				600#				SOCKET-WELD FLANGE BORE FOR SCH. 40 PIPE			90-93	#152
	2,3,4	E-226	12	2½"				150#				SLIP ON WELD				#50
	2	E-227	2	1½"				300#				SLIP-ON FLANGE				#51
	3	E-228	1	36"				125#	—			FLAT FACE	TURBO GEN EXHAUST		154, 90-93	TUBE TURN PT.# 711
	3,4,5	E-229	1	2'-3¼" x 4'-7¼"				—		STEEL	A285-GR.B	M/F 61.2# (1½" THK) STL F.B. 3" x 1½" x 20" LG.				DET. 4-A REF.#4
	3,4	E-230	2	48" OD x 28¼" I.D.						STEEL	ABS GR.A	SPEC. FL'G 48" OD x 28¼" I.D. x 2" THK. WITH 20-1⅝" HOLE ON 39½" B.C. SEE DET. 18-D ON REF.#5	DSL. GEN. EXH. PIPE ANCHOR			
	4	E-231	2	½"				300#	B16.5	FORGED STL	A-105	SLIP-ON FL'G F&D			NOTES 90-93	TUBETURN PT.# 51
	4	E-232	2	¾"				300#				LAP JOINT FLG F&D				111
	4	E-233	4	½"				150#				S.W. FL'G BORE FOR SCH. 40				150
	4	E-234	1	6"				300#	B16.5			SLIP-ON WELD FLANGE F&D				TUBE TURN PT. #51
	4	E-235	1	3"				600#				WELD NECK LARGE FEMALE FL'G F&D				TUBE TURN
	7	E-236	1	10"				600#	B16.5			WELD NECK FL'G F&D RAISED FACE, BORE FOR SCH. 40				33

LIST OF GASKETS

REQUISITION NO.	ALT NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
		E-300	4	36"			SERVICE	125#	—	ASBESTOS COMP	D1170GR P1161A	GASKET - ⅛" THICK RING TYPE			SEE NOTE 154 REF 1	JOHN MANVILLE #60
		E-301	9	12"				150#								
	4,5	E-302	11	10"						STNLS STL	TYPE 304	SPIRAL WOUND FLEXITALLIC-STYLE "CG"-STL OUT'R RING	W/ ASBESTOS FILLER			
	3,4,5	E-303	12	8"												
	4	E-304	16	6"												
	2,3,4,5	E-305	7	5"												
	3,4,5	E-306	20	4"												
		E-307	18	3"					B16.21	ASBESTOS COMP	D1170GR P1161A	GASKET - ⅛" THK RING TYPE				JOHN MANVILLE #60
	3,5	E-308	11	2½"												
		E-309	10	2"												
		E-310	2	1½"												
		E-311	8	1"												
	2,4,8	E-312	6	6"				300#	—	STAINLESS STL	TYPE 347	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - STEEL OUTER RING	WITH ASBESTOS FILLER			
	1	E-313	5	4"				900#	—							
	1	E-314	1	5"				600#	—							
	1,5	E-315	3	24"				150#	—		TYPE 304	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - STEEL OUTER RING	WITH ASBESTOS FILLER			
	1,5,6	E-316	10	28"					—						SEE NOTE 147 REF 1	
	1,5	E-317	9	4"				300#	—		TYPE 347					
	2	E-318	3	1"				600#								
	4	E-319	4	½"				300#			TYPE 304					
	4	E-320	8	¾"				150#	B16.21	ASBESTOS COMP	D1170GR P1161A	GASKET - ⅛" THK RING TYPE				JOHN MANVILLE #60
	4	E-321	1	2"				300#	—	STAINLESS STL	TYPE 347	SPIRAL WOUND FLEXITALLIC STYLE "CG"-STL OUT'R RING	W/ ASBESTOS FILLER			
	4	E-322	4	10"				150#	B16.21	ASBESTOS COMP	D1170GR P1161A	GASKET - ⅛" THK RING TYPE				
	4	E-323	2	8"												
	4	E-324	1	3"												
	4	E-325	2	4"												
	4	E-326	8	48" x 28¼"								FULL FACE	TO SUIT E-230			
	8	E-327		3"				600#	—	STAINLESS STL	TYPE 304	SPIRAL WOUND GASKET FOR LARGE MALE & FEMALE FLG'S			FLEX. STYLE R-1	FLEXITALLIC No. B1-50

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.	ALT NO.	BOLTING IDENT NO.	AMT REQ'D	STUDS MATERIAL ASTM	STUDS DIA	STUDS LGTH	STUDS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA	BOLTS LGTH	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	SERVICE	CODE NO.	REMARKS
		E-400	128								45	480°	CARBON STL A193 GR B7 HVY HEX HD	1½"	7"	B18.2.1 B1.1 UNC-2A	CARBON STL A194 SYM-2H HVY HEX SEMI-FINISHED	1½"	B18.2.2 B1.1 UNC-2B	36" FLG & VALVES		
		E-401	72											⅞"	4"			⅞"		12"		
	4,5	E-402	156											⅞"	3¾"			⅞"		10" & EXP. JOINTS		
	4,5	E-403	96											¾"	3½"			¾"		8"		
	5	E-404	144											¾"	3¼"			¾"		6" VALVES		
	2,3	E-405	56											¾"	3¼"			¾"		5" & VALVES		
	3,4	E-406	176											⅝"	3"			⅝"		4"		
	4	E-407	122											⅝"	2½"			⅝"		3", 2½" FLG & VALVES		
		E-408	20											⅝"	2¼"			⅝"		2"		
		E-409	8											½"	2"			½"		1½"		
		E-410	8											½"	1¾"			½"		1"		
	4,5	E-411	48											¾"	4"			¾"		5"-300# FLG		
	4,5	E-412	80											¾"	3¾"			¾"		4" & 8" 150# FLG W/ORFIFICE		
		E-413	8	CARBON STL A193 GR B7	⅞"	5¾"	B18.2.1 B1.1 UNC-2A	CARBON STL A194 GR 2H HVY HEX SEMI-FINISHED	⅞"	B18.2.2 B1.1 UNC-2B	360	750°								4"-600#		
	4	E-414	16		¾"	4¼"			¾"											3"		
	1,4,6,8	E-415	244										A307 GR.B	1¼"	5⅜"	B18.2.1 UNC-2A	A307 GR.B	1¼"	B18.2.2 B1.1 UNC-2B	24"-150#		
	4	E-416	12		½"	3"			½"		360	750								½"-600#		
	4	E-417	16		½"	2½"														½"-300#		
	4	E-418	8										A307 GR.B	½"	2¼"	B18.2.1 B1.1 UNC-2A	A-307 GR.B	½"	B18.2.2 B1.1 UNC-2B	½"-150#		
	4	E-419	32										CARBON STL A193 GR B7 HVY HEX HD	¾"	4¼"		CARB. STL A194 SYM-2H HVY HEX SEMI-FINISHED	¾"		6"-300#		
	4	E-420	40											1"	4¼"			1"		FOR E-230		
	8	E-421	56										A307 GR.B	1¼"	4½"	B18.2.1 B1.1 UNC 2A	A307 GR.B	1¼"	B18.2.2 B1.1 UNC-2B	28"-125#		

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	2-9-77 4-11-77		1. ADDED E-223, E-224, E-315, E-316 & E-415 AS PER DESIGN DEVELOPMENT. 2. E-223 & E-224 CHG'D FROM FLAT-FACED TO RAISED FACE FLG'S 3. E-315 & E-316 CHG'D TO STYLE "CG" FROM STYLE "D".	GLW PCO	S.G.G. LTR DATED 3-8-77
2	4-8-77 4-26-77 5-11-77		1. ADDED E-317, E-318, E-416 & E-225. 2. ADDED ASTM SPEC FOR E-312, E-313 & E-314 3. ADDED PC# E-226 4. ADDED PC# E-227 5. REVISED QTY OF E-203 (WAS 4), E-205 (WAS 3), E-206 (WAS 4), E-305 (WAS 2).	GLW RL Secc	S.G. SHARP LTR DATED 7-15-77
3	6-17-77		1. REVISED QTY. OF FOLLOWING: E-200 (WAS 1), E-202 (WAS 7), E-203 (WAS 6), E-205 (WAS 4), E-206 (WAS 10), E-226 (WAS 1), E-303 (WAS 6), E-305 (WAS 3), E-306 (WAS 7), E-308 (WAS 5), E-405 (WAS 24), E-406 (WAS 56) 2. ADDED E-228, E229 & E230	AG	S.G. SHARP LTR DATED 8-17-77
4	10-6-77	2 2 2 2 1	1-INCR THE QTY OF: E-202 (9-12), E205 (5-8), E206 (19-25), E207 (12-13), E209 (3-7), E210 (5-11), E213 (4-5), E218 (10-11), E224 (6-10), E226 (10-12), E312 (2-5), E402 (72-144), E403 (40-80), E405 (32-56), E406 (178-176), E407 (100-122), E411 (16-40), E412 (32-72), E414 (8-16), E-415 (152-272) 2- ADDED ITEM NOS. E-231 TO E-235, E-319 TO E-326 & E-411 TO E420. 3- CHANGED THE COMPLETE DESCR OF E-230 & E-302 TO E-306 4- CHANGED THE SIZE OF E-229 TO 2'-3¼" x 4'-7¼" & E-405 (LENGTH) TO 3¼" 5- ADDED REF #5	PCO	
5	12/14/77	ALL	1-REMOVE RESERVATION FROM E-229 2-INCREASED E-202 FROM 12 TO 13; E-203 FROM 8 TO 11; E-204 FROM 10 TO 14; E-209 FROM 7 TO 9; E-210 FROM 11 TO 12; E-213 FROM 5 TO 6 3-INCREASED E-302 FROM 7 TO 10; E-303 7 TO 12; E-306 16 TO 20; E-308 9 TO 11; E-315 2 TO 3; E-316 4 TO 9; E-317 7 TO 9 4-INCREASED E-402 FROM 144 TO 156; E-403 80 TO 96; E-404 120 TO 144; E-411 40 TO 48; E-412 72 TO 80	F.J.D.	1-4-78
6	2-23-78		1. INCREASED THE QTY FOR: E-203 (11 TO 13), E-204 (14-15), E-217 (6 TO 7), E-224 (10 TO 12), E-316 (9 TO 10), E-415 (272 TO 300)	EKM	3-1-78
7	6/30/78		1- ADDED ITEM E-236 PER YIS #4650-22-117. 2- INCR QTY OF E-207 (13-14) & E-302 (10-11)	PCG	7-6-78
8	10-4-78 11/14/79		1-ITEM E-415 DECR. FROM 300 TO 244 2-ITEM E-421 ADDED, E-327 ADDED 3-ITEM E-305 INCR. FROM 4 TO 7, AND ITEM E-312 INCR. FROM 5 TO 6 PER Y.I.S. M-4650-22-283 & 22-458	P.G.	3-26-79

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 12 NOVEMBER 1976
DRAWN E.J.K.
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. 4650-371-04-2
ALT. NO. 8

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR AUX. EXHAUST, L.P. BLEEDER STEAM AND ESCAPE PIPING

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

UAO 50134

REFERENCE PLANS

NO.	PLAN NO.	TITLE
5	4650-111-27	ARR'G'T OF PIP'G, ENGINE CASING MODULE #13
4	4650-111-16	LOWER LEV. PORT SIDE FWD. MODULE #2
3	4650-371-04-3	FITTING LIST
2	4650-371-04-1	PIPE & VLV. LIST AUX. EXH., L.P. BLEEDER STM & ESC. PIPING
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

M-706

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-2

FRAME 2 OF 2

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	°F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SE
504401	504401-C		1	E-200	2	36"			SERVICE	125#	—	FORGED STL.	A105	SLIP-ON FLANGE F.D. RAISED FACE	MAIN TURBINE GENE
				E-201	6	12"				150#	B16.5				STAND-BY TURBINE GE
	504401-E	504401-C	3,4,5	E-202	13	10"									AUX. EXH.
	504401-H	504401-C	2,3,5,6	E-203	13	8"									EXH.
	504401-F	504401-H	5,6	E-204	15	6"									AUX.STM. - MAIN FEED
	504401-B	504401-E	2,3,4	E-205	8	5"									
	504401-B	504401-E	2,3,4	E-206	25	4"									EXH. STM -
	504401-E	504401-N	4,7	E-207	14	3"									- CARGO C
				E-208	6	2½"								SOCK. WELD BORE FOR SCH. 40	- F.O. SERV.
	504401-E	504401-F	4,5	E-209	9	5"				300#				WELD-NECK FLANGE BORE FOR SCH. 40	- 3RD STG H
	504401-E		4,5	E-210	12	4"									- 4TH
				E-211	1	4"				600#					- MAIN FD
				E-212	1	3"									-
	504401-E	504401-F	4,5	E-213	6	2"				150#				SOCKET-WELD FLANGE BORE FOR SCH. 40	AUX. EXH. - FO. HTRS
				E-214	2	1½"									SAFETY VALVE
				E-215	2	1"									ATMOSPHERIC EXH.
				E-216	4	10"								SLIP-ON FLANGE	ESCAPE AND BOILER
	504401-H		6	E-217	7	8"									
	504401-E		4	E-218	11	6"									
				E-219	6	4"									
				E-220	8	3"									
				E-221	6	2"								SOCKET-WELD FLANGE BORE FOR SCH. 40	
				E-222	6	1"									
504401-A			1	E-223	1	24"								SLIP-ON FLANGE F.D.	DIESEL GEN. EXHAUST
	504401-E	504401-H	1,4,6	E-224	12	28"				125#					
504401-B			2	E-225	4	½"				600#				SOCKET-WELD FLANGE BORE FOR SCH. 40 PIPE	
	504401-C	504401-E	2,3,4	E-226	12	2½"				150#				SLIP ON WELD	
			2	E-227	2	1½"				300#				SLIP-ON FLANGE	
504401-C			3	E-228	1	36"				125#	—			FLAT FACE	TURBO GEN EXHA
	*		3,4,5	E-229	1	2'-5¼" x 4'-7¼"				—		STEEL	A285-GR.B	M/F 61.2# (1½" THK) STL PL BR. 3" x 1½" x 20" LG.	
1100-50134	*		3,4	E-230	2	42" OD x 28¼" I.D.						STEEL	ABS GR.A	SPEC. FL'G 42" OD x 28¼" I.D. x ½" THK. WITH 20-1⅛" HOLE ON 39½" B.C.	DSL. GEN. EXH. PIPE
504401-E			4	E-231	2	½"				300#	B16.5	FORGED ST'L	A-105	SLIP-ON FL'G. F&D	
504401-E			4	E-232	2	½"				300#				LAP JOINT FLG F&D	
504401-E			4	E-233	4	½"				150#				S.W. FL'G BORE FOR SCH. 40	
504401-E			4	E-234	1	6"				300#	B16.5			SLIP-ON WELD FLANGE F&D	
504401-E			4	E-235	1	3"				600#				WELD NECK LARGE FEMALE FL'G. F&D	
504401-J			7	E-236	1	10"				600#	B16.5			WELD NECK FL'G F&D RAISED FACE, BORE FOR SCH 40	

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	°F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SE
504424				E-300	4	36"			SERVICE	125#	—	ASBESTOS COMP	D1170 GR. P1161A	GASKET - 1/16" THICK RING TYPE	
SUPPLY				E-301	6	12"				150#	B16.21				
504424-C	504424-D		4,5,7	E-302	11	10"						STNLS ST'L	TYPE 304	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - ST'L OUT'R RING W/ ASBESTOS FIL	
			3,4,5	E-303	12	8"									
			4	E-304	16	6"									
	504424-J		2,3,4,8	E-305	7	5"									
	504424-D		3,4,5	E-306	20	4"									
SUPPLY				E-307	18	3"					B16.21	ASBESTOS COMP	D1170 GR. P1161A	GASKET - 1/16" THK RING TYPE	
			3,5	E-308	11	2½"									
				E-309	10	2"									
				E-310	2	1½"									
				E-311	8	1"									
504424-B	504424-C	504424-J	2,4,8	E-312	6	5"				300#	—	STAINLESS STL	TYPE 347	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - STEEL OUTER RING	WITH ASBESTOS FILLER
			2	E-313	5	4"				600#	—				
			2	E-314	1	3"				600#	—				
504424-A	504424-D		1,5	E-315	3	24"				150#	—		TYPE 304	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - STEEL OUTER RING	WITH ASBESTOS FILLER
		504424-E	1,5,6	E-316	10	28"					—				
504424-B			2,5	E-317	9	4"				300#	—		TYPE 347		
			2	E-318	3	1"				600#					
504424-C			4	E-319	4	½"				300#			TYPE 304		
SUPPLY			4	E-320	2	½"				150#	B16.21	ASBESTOS COMP	D1170 GR. P1161A	GASKET - 1/16" THK RING TYPE	
504424-C			4	E-321	1	6"				300#	—	STAINLESS ST'L	TYPE 347	SPIRAL WOUND FLEXITALLIC-STYLE "CG" - ST'L OUT'R RING	W/ ASBESTOS FILLER
SUPPLY			4	E-322	4	10"				150#	B16.21	ASBESTOS COMP	D1170 GR. P1161A	GASKET - 1/16" THK RING TYPE	
SUPPLY			4	E-323	2	8"									
SUPPLY			4	E-324	7	6"									
SUPPLY			4	E-325	2	4"									
504424-C			4	E-326	8	42" x 28¼"				—	—			FULL FACE	TO SUIT E-230
504424-N			8	E-327	4	3"				600#	—	STAINLESS STL	TYPE 304	SPIRAL WOUND GASKET FOR LARGE MALE & FEMALE FLG'S.	

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO.	BOLTING IDENT NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS (2) FOR EACH STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	°F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	
504430				E-400	128								45	480°	CARBON STL A193 GR B7 HVY. HEX. HD.	1½"	7"	B18.2.1 B1.1 UNC-2A	CARBON STL A194 GR 2H HVY HEX SEMI-FINISHED	1½"	B18.2.2 B1.1 UNC-2B	36"
				E-401	72											⅞"	4"			⅞"		12"
	504430-C	504430-D	4,5	E-402	156											⅞"	3¾"			⅞"		10"
	504430-C		4,5	E-403	96											¾"	3½"			¾"		8"
			5	E-404	144											¾"	3¼"			¾"		6"
	504430-C		3,4	E-405	56											¾"	3¼"			¾"		5"
	504430-B	504430-C	3,4	E-406	176											⅝"	3"			⅝"		4"
	504430-C		4	E-407	122											⅝"	2½"			⅝"		3"
				E-408	40											⅝"	2¼"			⅝"		2"
				E-409	8											½"	2"			½"		1½"
				E-410	8											½"	1¾"			½"		1"
	504430-C	504430-D	4,5	E-411	48											¾"	4"			¾"		5"
	504430-C		4,5	E-412	80											¾"	3¾"			¾"		4"
504429	504430			E-413	8	CARBON STL A-193 GR B7	⅞"	5½"	B18.2.1 B1.1 UNC-2A	CARBON STL A-194 GR 2H HVY HEX SEMI-FINISHED	⅞"	B18.2.2 B1.1 UNC-2B	360	755°								4"
	504430	504429-B	4	E-414	16		¾"	4¾"			¾"											3"
504430-A,B	504430-C		1,4,6,8	E-415	244										A 307 GR. B	1⅛"	5⅞"		A 307 GR. B	1⅛"		24"
504429-A			2	E-416	12		½"	3"			½"		360	755								½"
			4	E-417	16		½"	2½"														½"
SUPPLY			4	E-418	8										A307 GR. B	½"	2½"	B18.2.1 B1.1 UNC-2A	A-307 GR. B	½"	B18.2.2 B1.1 UNC-2B	½"
504430-C			4	E-419	12										CARBON STL A193 GR B7 HVY HEX HD	¾"	4¼"		CARB STL A194 GR 2H HVY HEX SEMI FINISHED	¾"		6"
504430-C			4	E-420	40											1"	4¾"			1"		FOR
SUPPLY			8	E-421	56										A307 GR.B	1¼"	4½"	B18.2.1 B1.1 UNC 2A	A307 GR.B	1¼"	B18.2.2 B1.1 UNC 2B	28'-1

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-3

FRAME 1 OF 3

50-111-21
50-111-16
50-371-04-2
50-371-04-1
EF-529
PLAN NO.

LIST OF FITTINGS

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
			E-500	1	36"	12.5	204°	STD.	.375	B16.9	SMLS. STL.	A234GRWPB	ELBOW 90° S.R. B.W.		NOS. 90-93	TUBE TURN PT #5
			E-501	2	12"			STD.	.375				L.R.			
		3,6	E-502	15	10"			40	.365							
		3,4,6	E-503	16	6"				.280							
		9	E-504	13	5"				.258							
		3,4,9	E-505	26	4"				.237							
		3	E-506	6	3"				.216							
			E-507	1	6"x4"				.280-.237				REDUCING			
			E-508	3	5"x4"				.258-.237							#1-R
		3	E-509	2	4"x3"				.237-.216							
			E-510	1	36"			STD.	.375				45°			
		3	E-511	2	12"			STD.	.375							
			E-512	6	10"			40	.365							#5
		3,6	E-513	9	6"				.280							
			E-514	12	4"				.237							
			E-515	1	5"				.258							
		4,6	E-516	3	8"x6"				.322-.280				90° REDUCING			
		4	E-517	2	10"x8"				.365x.322				REDUCER CONC. B.W.			#1R
			E-518	5	8"x6"				.322-.280							#90
			E-519	2	6"x5"				.280x.258							
		2,6,3	E-520	3	4"x2½"	48	480		.237x.203							
		3	E-521	1	3"x2"				.216x.154							
			E-522	1	5"x2½"				.258x.203							
		2,3	E-523	2	3"x1½"				.216x.145							
			E-524	1	10"	12.5	204°		.365				ELBOW 90° S.R. B.W.			
		6	E-525	4	2½"				.203				L.R.			#3
			E-526	2	6"				.280				TEE B.W.			#1
			E-527	2	3"				.216							#20
		6	E-528	3	8"				.322							
			E-529	1	10"				.365							
			E-530	1	5"x5"x4"				.258-.237				REDUCING			
			E-531	1	8"x8"x4"				.322-.237							#22
			E-532	2	6"x6"x5"				.280-.258							
			E-533	2	4"x4"x3"				.237-.216							
			E-534	1	3"x3"x2"				.216-.154							
		3	E-535	2	8"x6"x5"				.322-.258							
		1	E-536	1	3"x2½"	48	480°		.216x.203				REDUCER CONC. B.W.			#90
		4	E-537	1	36"	12.5	204°	150#	—	—	STNS. ST'L	[illegible]	EXPANSION JT - FLG'D - F&D F-F = 15⅝"		NOTE #96	
		4,5	E-538	3	1½"	48	480°	3000#	—	B16.11	FORGED STL.	A 234	ELBOW 90° SOC WELD		NOS. 174,90-93	BONNEY FORGE
		3,4	E-539	5	2"				—							
		1	E-540	2	¾"				—							
		4,1	E-541	4	½"				—							
		4	E-542	10	2			150#	—	B16.3	MALL IRON	A-197	SCR'D.		~~NOS. 177,90-93~~	FLAGG FIG. #1101
		4,1	E-543	8	½"	48	480	150#	—	B16.3	MALL IRON	A-197	ELBOW 90° SCR'D.		NOS. 90-93	FLAGG FIG. 1001
		4,1	E-544	2	¾"				—							
		4	E-545	8	1"				—							
		4	E-546	2	2"				—				45°			#1102
			E-547	2	¾"			3000#	—	B16.11	FORGED STL.	A 234	TEE S.W.		NOS. 174,90-93	BONNEY FORGE
		4	E-548	4	½"			150#	—	B16.3	MALL. IRON	A-197	SCR'D.		NOS. 175,90-93	FLAGG FIG. #1021
		4	E-549	5	1"			3000#	—	B16.11	FORGED STEEL	A 234	S.W.		NOS. 90-93	BONNEY FORGE
		4	E-550	1	½"x¾"x½"				—							
		4	E-551	1	1"x1"x½"				—				REDUCING			
		4	E-552	2	2"x2"x1"				—							
			E-553	6	½"			3000#	—	—	FORGED STL.	A-105	S.W. X S.W. X F.P.T.		NOS. 174,135,90-93	BONNEY FORGE
			E-554	1	3"	12.5	204	150#	—	FLG/B16.5	CAST STL.	A216 GR WCB	STRAINER "Y" TY. FLG'D. F.F.D. MONEL SCREENS W/.033 PERF.		NOS. 90-93	MUELLER FIG. 761
			E-555	1	2"			600#	—				SCR'D.		NOS. 165,135,90-93	MUELLER FIG. 861-BC
			E-556	1	6"			150#	—	FLG/B16.5			FLG'D. F.F.D.		NOS. 90-93	MUELLER FIG. 761
		4	E-557	3	1"			600#	—				SCR'D.		NOS. 165,135,90-93	MUELLER FIG. 861-BC
			E-558	2	½"			150#	—	—	BRONZE	B-62	MONEL SCREENS W/ 1/32" OPENINGS		NOS. 175,90-93	MUELLER FIG. 351
		4	E-559	12	2"			3000#	—	—	FORGED STL.	A105	UNION SOCK WELD.-STL. TO STL. SEATS		NOS. 174,90-93	BONNEY FORGE
		3,4	E-560	23	1"				—	—						
		4	E-561	1	¾"				—	—						
		3,4	E-562	15	½"				—	—						
		4	E-563	3	⅜"				—	—						
		3,4	E-564	2	1"			3000#	—	—						
			E-565	1	½"			200#	—	—	BRONZE	B-62	C X MPT SLDR. JT.		NOS. 90-93	FLAGG FIG. #3096
		4	E-566	1	1½"x¾"			150#	—	B16.14	MALL IRON	A197	BUSHING SCR'D.			#2071
		4	E-567	1	1"x¾"				—							
		4	E-568	2	¾"x⅜"				—							
			E-569	2	¾"x½"			3000#	—	B16.14	FORGED STL.	A-105				BONNEY FORGE
		4	E-570	2	2"x1"				—	B16.11			RED. INSERT SOCK WELD			
			E-571	2	¾"				—				PIPE PLUG SCR'D.			
			E-572	7	½"				—							
			E-573	2	½"			150#	—	—	BRONZE	B-62	TRAP THERMO. SCR'D.		NOS. 175,187,90-93	SARCO TY. 9B-225
			E-574	1	½"			400#	—	—	STNLS. STEEL	A276 TY 316				TD-50
			E-575	2	1"			600#	—							
			E-576	1	¼"			200#	—	B16.18	BRONZE	B-62	ADAPTER - C X MPT SLDR JT.		NOS. 90-93	FLAGG FIG. #3076
			E-577	1	½"			3000#	—	B16.11	FORG. STEEL	A-234	CAP, PIPE			BONNEY FORGE
			E-578	1	10"x4"				—	—	FORGED STL.	A-105	WELDOLET I.P.S. RUN & OUTLET		NOS. 172,90-93	
			E-579	3	10"x½"				—	—			SOCKOLET - I.P.S. RUN & OUTLET		NOS. 171,90-93	
			E-580	2	6"x½"				—	—						
		5	E-581	2	5"x½"				—	—						
		1,5	E-582	2	4"x½"				—	—						
			E-583	2	12"x1"				—	—						
			E-584	2	4"x2"				—	—						
			E-585	1	12"x¾"				—	—			THREDOLETS		NOS. 175,90-93	
		5	E-586	1	12"x1"				—	—						
		4,5	E-587	1	5"x1"				—	—						
			E-588	1	4"x1"				—	—						
		1,4	E-589	3	4"x1"				—	—						
			E-590	1	3"x1"				—	—						
			E-591	1	1½"x½"				—	—						
		3	E-592	4	5"x½"				—	—						
		3,4	E-593	4	4"x½"				—	—						
			E-594	1	2"x¾"				—	—						
		3,4,5	E-595	2	3"x½"				—	—			SOCKOLET			
		1	E-596	1	8"x1"			3000#	—	—	FORGED ST'L	A-105	THREDOLET - I.P.S. RUN & OUTLET		170,90-93	
		3	E-597	1	2"x½"								~~WELDOLET~~		172,90-93	
		3	E-598	1	1"			—	—	—	STEEL	A53 TY E OR S GR B	BHD PENET. SLEEVE			EF-496 - FIG #2
			E-599	4	8"x4"			40	.322x.237	B16.9	SMLS STL	A-234GRWPB	ELBOW 90° L.R. B.W. REDUCING		NOS. 90-93	TUBE TURN PT. #1-R
			E-600	6	16"				.375				ELBOW 90° L.R. B.W.			TUBE TURN PT #1
			E-601	13	6"				.280							
			E-602	5	3"				.216							
			E-603	2	6"x3"				.280x.216				REDUCING			#1-R
			E-604	2	4"x3"				.237-.216							#1
		3,6	E-605	19	8"				.322							
			E-606	4	3"				.216				45°			#5
		3	E-607	2	10"x6"				.365x.280				REDUCER CONC. B.W.			#90
		3	E-608	2	12"x8"			20 x 40	.312x.322							
			E-609	2	1½"			6000#	—	B16.11	FORGED STL.	A-105	ELBOW 45° - SOC WELD.		NOS. 174,90-93	BONNEY FORGE

ALTERATIONS

No.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
5	1-31-78		1. REVISED THE QTY. FOR: E-525(3-4), E-582(4-2), E-587(1-2) E-632(10-12), E-650(9-20). 2. DELETED E-581 & E-595. 3. CHG'D. SIZES FOR: E-586(12"x¾" TO 12"x1") E-643(12"x¾" TO 12"x2½") 4. ADDED E-678, E-679 & E-680.	RAM	
6	3-27-78		1. ADDED E-681 & E-682. 2. REVISED THE SIZE FOR E-638 (40"x115" TO 42"x144") 3. INCREASED THE QTY FOR: E-502(13-15), E-503(13-16), E-516(2-3), E-518(3-5), E-528(1-3), E-541(1-4), E-605(11-19), E-627(40-52), E-628(50-62), E-646(6-8), E-649(5-10), E-650(20-33), E-679(5-7). - DCR DATED 2/17/78 (IN PART)	RAM	3 31 78
7	6/30/78		1- REVISED DESIGN CRITERIA FOR AUX EXH. MN. TO AGREE W/PIPING DIA. M4650-111-E0-13 ALT. 2. 2- INCR QTY OF E-679 (1-9) 3- ADDED ITEM NOS. E-683 THRU E-686	PCG	7 6 78
8	8-16-78		1- LENGTH OF ITEM E-616 CHANGED FROM 12" TO 29" 2- INDICATED QTY OF E-617 FROM 2 TO 4 REQ'D. HULL 4650 ONLY. LENGTH OF ITEM E-618 CHANGED FROM 12" TO 22" 3- ADDED ITEM E-683 FOR HULL 4661 ONLY. - THE ABOVE ITEMS TO SUIT Y/S-4650-22-243. 4- ADDED ITEM E-687 PER Y/S 4650-22-228. 5- ADDED ITEM - E-688 PER Y/S 4650-22-240.	P.G.	8 29 78
9	10-3-78 1-30-79		1 REVISE QTY. OF ITEMS E-646 FROM 8 TO 10 AS PER Y/S 4650-22-271 E-666 FROM 9 TO 10 E-667 FROM 14 TO 16 E-504 FROM 12 TO 13 ... 295 2. E-518 QTY WAS 7 NOW 9 3. E-505 QTY WAS 25 NOW 26.	KRW EJK	3 26 79

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	2-9-77		ADDED E-619, E-620, E-621 & E-622 AS PER DESIGN DEVELOPMENT	GLW	
2	4-15-77 4-26 4/11		1. INCR E-599 FROM 1 TO 2 (E-585 FROM 2 TO 3) 2. ADDED PC# E-596, E-597 3. ADDED E-623 THRU E-632. 4. REVISED QTY OF E-520 (WAS 1), E-523 (WAS 1), E-582 (WAS 3), E-589 (WAS 2).	GLW KL Secc	G.G.S. LTR DATED 5-12-77
3	6-11-77	2-3 2-3 2-3 2 2 3	1- INCR QTY OF E-502(11-13), E-503(5-9), E-505(14-22), E-506(5-6), E-509(1-2), E-511(1-2), E-513(2-7), E-520(2-3), E-535(1-2), E-538(1-3), E-539(1-4), E-560(3-10), E-562(4-8), E-592(1-4), E-593(1-2), E-595(1-2), E-605(10-11), E-626(1-2), E-627(5-29), E-628(5-34), E-629(3-11), E-630(13-37), E-631(11-18), E-632(4-5). DECR. E-504 FROM 11 TO 2 2- ADDED E-598 & E-633 THRU E-663 3- DELETED E-597 & E-610 THRU E-612 4- CHG'D THE SIZE OF E-607 (10"x4" TO 10"x6") 5- CHG'D THE SCH OF E-608 TO READ "20 x 40", IN LIEU OF "40" 6- REMOVED RES. ON E-616 THRU E-618	PCG	
4	9/12/77	ALL	1- REMOVED RESERVATION FROM FITTING NOS. E-537, E-619 & E-622. 2- DELETED "GALV" / REVISED FIG NOS. FOR ITEM NOS. E-543 THRU E-545, E-548, & E-566, E-567, E-568 3- INCREASED SIZE OF FITT. NO. E-587 FROM 5"x¾ TO 5"x1". FITT. NO. E-595 FROM 3-36 x ½ THREDOLET TO 5"x½" SOCKOLET, & FITT. NO. E-589 FROM 4"x¾ THREDOLET TO 4"x1". 4- FTG. E-559 THRU E-563 FROM SCRD. TO S.W. & REVD. NOTES TO SUIT 5- INCREASED AMT. REQ'D E-503 FROM 9 TO 13; E-505 FROM 22 TO 25; E-516 FROM 1 TO 2; E-517 FROM 1 TO 2; E-543 FROM 3 TO 8; E-560 FROM 10 TO 23; E-562 FROM 8 TO 15; E-593 FROM 2 TO 4; E-642 FROM 2 TO 8; E-643 FROM 1 TO 3; E-646 FROM 4 TO 6; E-649 FROM 4 TO 5; E-539 FROM 4 TO 5; E-551 FROM 2 TO 3 6- DELETED FITTING NOS. E-542 & E-546 FROM LIST. 7- ADDED FITTING NOS. E-664 THRU E-677. 8- THE FOLLOWING FITTINGS CHANGED FROM 150# SCR'D. MALL. IRON TO 3000# SOCKET WELD FORGED STEEL, FITT. NOS. E-549, E-550, E-551 & E-552 9- E-570 FROM HEX BUSHING TO S.W. RED. INSERT 10- E-627 FROM 29 TO 40; E-628 FROM 34 TO 50; E-629 FROM 11 TO 16; E-630 FROM 37 TO 50; E-631 FROM 18 TO 25; E-632 FROM 5 TO 10 11- E-664 FROM SCRD. TO SW. & PRESS. FROM 150# TO 3000#	EJ D.	

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINER SHIP	8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 5 NOV. 1976
DRAWN E.J.K.
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-371-04-3
ALT. NO. 9

FITTING LIST FOR AUX.EXHAUST, L.P. BLEEDER STEAM AND ESCAPE PIPING

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

UAO-50139-A

REFERENCE PLANS

NO.	PLAN NO.	TITLE
5	4650-111-16	ARRG'T OF PIPING LOWER LVL (P) FWD MOD. #2
4	4650-111-27	ARRG'T OF PIPING, ENGINE CASING MOD. #13
3	4650-371-04-2	FLG. GASKETS & BOLTING FOR AUX. EXH & BLEEDER STM PIPING
2	4650-371-04-1	PIPE & VLV. FOR AUX. EXH & BLEEDER STM. PIPING
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

1

M-707

	DATE OF ISSUE
ALTERATION	1 2 3 4 5 6 7 8 9
ENGINEERING DISTRIBUTION	[illegible]
OWNERS	[illegible]
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R.	
OWNER'S INSP.	1 1 1 1 1 1 1 1 1
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	1 1 1 1 1 1 1 1 1
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT. - 21	1 1 1 1 1 1 1 1 1
MACH. DRAFT. - 22	2 2 2 2 2 2 2 2 2
ELEC DRAFT. - 23	1 1 1 1 1 1 1 1 1
OUTFIT DRAFT. - 25	
ESTIMATING	
J. DOUGHERTY (TD)	1 1 1 1 1 1 1 1 1
PRODUCTION (BCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
J. SIMMONS	1 1 1 1 1 1 1 1 1
PIECE RATE - 11	1 1 1 1 1 1 1 1 1
TEST DEPARTMENT	
GROUND ASSEMBLY	2 2 2 2 2 2 2 2 2
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	2 2 2 2 2 2 2 2 2
OPTICAL DETAIL - 45	2 2 2 2 2 2 2 2 2
WET DOCK	
PIPE SHOP - 52	6 6 6 6 6 6 6 6 6
OUTFIT. #1 PIER	1 1 1 1 1 1 1 1 1
PIPE DRAFT. - 52	2 2 2 2 2 2 2 2 2
BOILER SHOP - 58	1 1 1 1 1 1 1 1 1
OUTSIDE MACH. - 60	1 1 1 1 1 1 1 1 1
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 51	
PAINT SHOP - 75	1 1 1 1 1 1 1 1 1
WELDING	
MOLD LOFT - 41	1 1 1 1 1 1 1 1 1
BRACKET SHOP	
TOTAL YARD DIST.	[illegible]

4650-51 ALT. 2
4650-51 ALT. 3
4650-51 ALT. 4
4650-51 ALT. 5
4650-51 ALT. 6
4650-51 ALT. 7
4650-51 ALT. 8
ALT 9

SQ.FT.

LIST OF FITTINGS

FITTING IDENT. NO.	AMT. REQ'D	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF #1	MANUFACTURER DWG OR FIG. NO. OR EQUAL
		P.S.I.	°F									
E-610				3000#	—	B16.11	FORGED STL	A-105	LATROLET - RUN & OUTLET - I.P.S. S.W.	BOILER BLOW & ESCAPE	NOS. 173, 90-93	BONNEY FORGE
E-611	2											
E-612	4											
E-613	2			3000#	—	B16.11	FORGED STL	A-105	LATROLET - RUN & OUTLET I.P.S. S.W.	BOILER BLOW & ESCAPE		
E-614	2				—				S.W.			
E-615	4				—				S.W.			
E-616	2			150#	—		STAINLESS STL	TYPE 304	EXPANSION JT - FLG'D F&D - F-F = 19"		NOTES 90-93 & 161	PENFLEX M-100 #15
E-617					—				12"			
E-618	2				—				22"			
E-619	2			150#			STAINLESS STL	TYPE 304	23"	DIESEL GENERATOR EXHAUST	NOTE 96	
E-620	1			150#	—	—	STAINLESS STL	TYPE 304	= 23½"			G.E. DWG #41A219985
E-621	1			—	—	—	——	——	FLGD. MUFFLER			41A300711
E-622	1			SCH 10	.312x.250		SEAMLESS STL	A 234 GR WPB	CONC. REDUCER - BUTT WELD		NOS 90-93	TUBE TURN PT. #590
E-623	1			3000#	—	—	FORGED STL	A-105	THREDOLET - I.P.S. RUN & OUTLET		NOS 170, 90-93	BONNEY FORGE
E-624	1			—	—	—	STEEL/BRONZE	SEE REMARKS	FLGD ADAPTER W/CAP & CHAIN	DET. "6-A" IT.5, DET. "6-B" FIG. 3, & DET. "6-C"	SPECS: NIPPLE ASS'Y FIG. ASS'Y CAP B62	EF-345
E-625	1			SCH 40	.237x.203	B16.9	SMLS. STL	A234 GR WPB	TEE REDUCING BUTT WELD		NOS. 90-93	TUBE TURN PT. #22
E-626	2				.237							#20
E-627	52			—	—	—	STEEL	A519 GR 1015 HR	WELDED SLEEVE			EF-496 FIG. 1
E-628	62			—	—	—						
E-629	16			—	—	—		[illegible]				
E-630	50			—	—	—						
E-631	25			—	—	—		A519 GR 1015 HR				
E-632	15			—	—	—		[illegible]				
E-633	1			SCH 40	—	B16.9	SMLS. ST'L	A234 GR WPB	ELBOW 90° LR BW RED.		NOTES 90-93	TUBE TURN PT #1-R
E-634	1								CONCENTRIC REDUCER BW			90
E-635	1			150#	—	FLGD B16.5	CAST STL	A216 GR WCB	STRAINER Y TY. FLGD F&D MONEL SCREEN W/.035 PERF		NOTES 90-93 & 190	MUELLER FIG #761
E-636	1			150#			CARB. MOLY STL	A204 GR B	13⅞" OD - 2 9/16" DIA. HOLE ORIFICE PLT.		VENDOR FURNISHED	RILEY-BEAIRD 98603-4
E-637	1			STD	.375x.365	B16.9	SMLS. ST'L	A234 GR WPB	ELBOW 90° LR BW RED.		NOTES 90-93	TUBETURN PT. #1-R
E-638	1			—			STL.	A285 GR B	½" THK PL. - TRANSITION PIECE	TURBO GEN EXHAUST	SEE DET. 4-61 ON REF. #5	
E-639	1			3000#	—		FORGED ST'L	A-105	THREDOLET - IPS RUN & OUTLET		NOTES 90-93 & 170	BONNEY FORGE
E-640	1			40	.258	B16.9	SMLS. ST'L	A234 GR WPB	TEE BW		NOTES 90-93	TUBETURN PT. #20
E-641	2				.258x.237				CONC. RED BW		NOTES 90-93	TUBE TURN PT. #90
E-642	8			3000#	—	—	FORGED ST'L	A-105	SCR'D UNION ST'L TO ST'L SEAT	STRNR BLOW DOWN	NOTES 90-93 & 175	BONNEY FORGE
E-643	3			3000#	—	—			THREDOLET - IPS RUN & OUTLET		90-93 & 170	BONNEY FORGE
E-644	2			40	.280x.216	B16.9	SMLS. STL	A234 GR WPB	CONC. RED. B.W.		90-93	TUBE TURN PT #90
E-645	2			10	.250				ELBOW 90° LR BW		90-93	PT #1
E-646	3			40	.322				ELBOW 45° LR BW		90-93	PT #5
E-647	2			—	—	—	ST'L	A85 GR A	WELD SLEEVE			EF-496 FIG. #1
E-648	10			—	—	—						EF-496 FIG #1
E-649	10			—	—	—						
E-650	33			—	—	—		A519 GR 1015 HR				2
E-651	2			—	—	—		[illegible]	BHD PENET. SLEEVE			
E-652	2			3000#	—	—	FORG. STEEL	A-105	SOCKOLET - IPS RUN & OUTLET		NOTES 90-93 & 171	BONNEY FORGE
E-653	1				—	B16.11		A-234	HALF COUPLING SCR'D.		NOTES 90-93 & 175	BONNEY FORGE
E-654	6				—	B16.11					NOTES 90-93 & 175	BONNEY FORGE
E-655	2	8"IPS		—	—	—	STEEL	A-85-GR A	DOUBLER PLATE (20.4#)		SEE DRWG. M4650-111-27	
E-656	2			—	—	—			END PLATE (40.8#) FOR 16" PIPE			
E-657	1			—	—	—			(61.2#) FOR 28" PIPE			
E-658	3			20	.250	B16.9	SMLS ST'L	A-234-GR WPB	ELBOW 90° LR. B.W.		NOTES 90-93	TUBE TURN PT. #20
E-659	2			20 X 40	.250X.365				CONC. RED B.W.			PT# [illegible]
E-660	2			40	.280X.375							PT#90
E-661	20'-0			—	—	—	STEEL	A85 GR A	FLAT BAR (2"x¼")	KP RAIN GUARD (DET "18-D" ON REF #4)		
E-662	8	6"IPS		—	—	—			20"-OD X 1'-6" IPS X ½" THK PL.			
E-663	1	8"IPS		—	—	—			12"-OD X 8" IPS X ½" THK PL.			
E-664	6			3000#	—	B16.11	FORGED STL	A-234	90° S.W. ELBOW		NOTES 90-93	BONNEY FORGE
E-665	2				—				S.W. TEE			
E-666	10	68	480	—	—	—	FORGED STEEL	SAE 1020	TYPE "A" CHILL RING - SCH. 40 PIPE			BETH. STL. STD EF-358 FIG. 13
E-667	10			—	—	—			TYPE "B"			
E-668	12	360	755	—	—	—			TYPE "A"			
E-669	10			—	—	—			TYPE "B"			
E-670	1	360	755	—	—	—			TYPE "B"			
E-671	2			300#	—	B16.3	MALL IRON	A-197	REDUCING COUPLING - SCREWED		NOTES - 90-93	FLAGG FIG. #1240
E-672	6				—				90° ELBOW SCREWED			#1201
E-673	2				—				TEE - SCREWED			#1221
E-674	2	48	480	3000#	—	B2.1	FORGED STEEL	A-105	1" FPT x ½ MPT REDUCING ADAPTER			CAJON #16-RA-8
E-675	2			3000#	—	B2.1			⅜" FPT x ½ MPT			12-RA-8
E-676	1			3000#	—	B16.11		A-105	S.W. REDUCING INSERT			BONNEY FORGE
E-677	1			—	—	—	——	SEE REMARKS	HOSE NIPPLE W/CAP & CHAIN	DET. "6-A" IT.6, & DET "6-C"	NIPPLE 6/A-25 CAP B-62	BETH. STD. EF-345
E-678	2	360	755				FORGED STL	A105	SCR'D BOSS			BETH STD. EF-358 FIG. 7
E-679									SOCKET WELD BOSS			FIG. 6
E-680	1								THREDOLET		NOTES 90-93 & 170	BONNEY FORGE
E-681	1			3000#		B16.11		A234	TEE - S.W.		90-93	
E-682	1			40	.322	B16.9	SMLS STL	A234 GR WPB	90° ELBOW - BUTT WELD S.R.			TUBE TURN PT. #3
E-683				3000#		B16.11	FORG. STL	A234	S.W. RED TEE			BONNEY FORGE
E-684												
E-685									S.W. TEE			
E-686							STL/BRASS		FLGD ADAPTER W/CAP & CHAIN	DET. "6-A" IT.6, DET "6-B" FIG. #3, DET "6-C"	USE W/ VLV. E-150	B.S. EF-345
E-687	1 SHT			—	—	—	STEEL	A569	24" WIDE X 66 LONG STL. PL	COMBUSTION AIR DUCT FOR DIESEL GENERATOR		
E-688	1	28 RUN		3000#			FORGED STL.	A-105	THREDOLET	CONN. FOR MANOMETER	NOTES 90-93 & 170	BONNEY FORGE
[illegible]							STAINLESS STL	TYPE 304	EXPANSION JT - FLGD F&D F-F = 18"	SAFETY VALVE ESCAPE	NOTES 90-93 & 161	PENFLEX M-100 #15

LIST OF

STRUCTURAL MODULAR UNIT APPLICATION																									REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL
UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT #13	UNIT	UNIT #15	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT									P.S.I.	°F				
	1																								504402					E-500	1	36"	12.5	204°	STD	.375	B16.9	SMLS STL
														1											504402					E-501	2	12"			STD.	.375		
	5				1	2						7													SUPPLY				5,6	E-502	15	10"			40	.365		
4				2		7						3																	3,4,6	E-503	16	6"				.280		
2		6				1			1			1		2															9	E-504	13	5"				.258		
4		5		3		1		2	7			2		2															3,4,9	E-505	26	4"				.237		
3							1					2																	3	E-506	6	3"				.216		
														1											504402					E-507	1	6x4"				.280-.237		
														1																E-508	3	5x4"				.258-.237		
1														1												504402-B			3	E-509	2	4x3"				.237-.216		
	1																													E-510	1	36			STD	.375		
	1													1												504402-B			3	E-511	2	12"			STD.	.375		
	2											1																		E-512	6	10"			40	.365		
1				3								5														504402-B	504402-F		5,9	E-513	9	6"				.280		
		2							2					1																E-514	12	4"				.237		
		1																												E-515	1	5"				.258		
						2	1																			504402-C	504402-D		4,6	E-516	3	8x6"				.322-.280		
					1	1																							4	E-517	2	10x8"				.365x.322		
1						2						1		1												504402-D			6	E-518	5	8x6"				.322x.280		
												1																		E-519	2	6x5"				.280x.258		
2									1																	504402-A	504402-B		2,8,7'	E-520	3	4x2½"	48	480		.237x.203		
																												7'	E-521	1	3x2"				.216x.154		
1																													7'	E-522	1	5x2½"				.258x.203		
2																										504402-A			2,7'	E-523	2	3x1½"				.216x.145		
																														E-524	1	10"	12.5	204°		.365		
1	3																								SUPPLY				5	E-525	4	2½"				.203		
						1																			504402					E-526	2	6"				.280		
2																														E-527	2	3"				.216		
						3																				504402-D			6	E-528	3	8"				.322		
						1																								E-529	1	10"				.365		
																														E-530	1	5x5x4"				.258-.237		
									1																					E-531	1	8x8x4"				.322-.237		
																														E-532	2	6x6x3"				.280-.216		
																														E-533	2	4x4x3"				.237-.216		
																														E-534	1	3x3x2"				.216-.154		
1									1																	504402-B			3	E-535	2	8x8x5"				.322-.258		
	1																												7'	E-536	1	3x2½"	48	480°		.216x.203		
	1																								502207-A				4	E-537	1	36"	12.5	204°	150#			STNS STL
3																									SUPPLY				3,7'	E-538	3	1½"	48	480°	3000#	—	B16.11	FORGED STL.
				2				1				2																	3,4	E-539	5	2				—		
																													7'	E-540	2	¾"				—		
														4															6,7'	E-541	4	½"				—		
																													4	E-542	10	2			150#	—	B16.3	MALL IRON
			5						3																				4,7'	E-543	8	½"	48	480°	150#	—	B16.3	MALL IRON
																													4,7'	E-544	2	⅜"				—		
1																													4,7'	E-545	8	1"				—		
																													4	E-546	2	2"				—		
																													7'	E-547	2	¾"			3000#	—	B16.11	FORGED STL.
									4																				4,7'	E-548	4	½"			150#	—	B16.3	MALL IRON
								5																					4,7'	E-549	5	1"			3000#	—	B16.11	FORGED STEEL
																									504403	504403-C			4,7'	E-550	1	½x¾x¾"				—		
																													4,7'	E-551	1	1x1x½"				—		
								1																					4,7'	E-552	2	2x2x1"				—		
																									504403				7'	E-553	6	½"			3000#	—	—	FORGED STL
1																									504408					E-554	1	3"	12.5	204	150#	—	R66/B16.5	CAST STL.
																														E-555	1	2"			600#	—	——	
1																														E-556	1	8"			150#	—	R66/B16.5	
1								2																		504403-B			4	E-557	3	1"			600#	—	——	
																														E-558	2	½"			150#	—	——	BRONZE
																									SUPPLY				4	E-559	12	2"			3000#	—	—	FORGED STL.
4								9				10																	3,4	E-560	23	1"				—	—	
																													4	E-561	1	¾"				—	—	
3			4						8																				3,4	E-562	15	½"				—	—	
									2																				4	E-563	3	⅜"				—	—	
																													3,4	E-564	2	1"			3000#	—	—	
																									504403					E-565	1	½"			200#	—	—	BRONZE
																									SUPPLY				4	E-566	1	1¼x¾"			150#	—	B16.14	MALL IRON
																									SUPPLY				4	E-567	1	1"x¾"				—		
																													4	E-568	2	½x⅜"				—		
																									504403					E-569	2	¾x½"			3000#	—	B16.14	FORGED STL.
								2																	SUPPLY				4	E-570	2	2x1"				—	B16.11	
																									504403					E-571	2	¾"				—		
																														E-572	7	½"				—		
									2																504410					E-573	2	½"			150#	—	—	BRONZE
1																														E-574	1	¾"			400#	—	—	STNLS. STEEL
1																														E-575	2	1"			600#	—	—	
																									504403					E-576	1	¼"			200#	—	B16.18	BRONZE
																														E-577	1	½"			3000#	—	B16.11	FORG. STEEL
																									504405					E-578	1	10x4"				—	—	FORGED STL.
																														E-579	3	10x½"				—	—	
						2																								E-580	2	6x½"				—	—	
																													5	E-581	2	5x½"				—	—	
1														1															2,5	E-582	2	4x½"				—	—	
														1																E-583	2	12x1"				—	—	
				1																										E-584	2	4"x2"				—	—	
1																														E-585	1	12x¾"				—	—	
	1																								504405-D				5	E-586	1	12x1"				—	—	
														1											504405-C				4,5	E-587	1	5x1"				—	—	
1																									504405					E-588	1	4x1"				—	—	
1														1											504405-C				3,4	E-589	3	4x1"				—	—	
	1																								504405					E-590	1	3x1"				—	—	
																														E-591	1	1x½"				—	—	
		1							3																	504405-B			8	E-592	4	5x½"				—	—	
2		1							1																	504405-B	504405-C		3,4	E-593	4	4x½"				—	—	
																														E-594	1	2x¾"				—	—	
																										504405-B	504405-C		3,4,5	E-595	2	3x½"				—	—	
					1																				504405-A				2	E-596	1	8x1"			3000#	—	—	FORGED ST'L
																									~~504402-A~~				2,5	E-597	1	2½"						
												1																	3	E-598	1	1"			—	—	—	STEEL
																									504402					E-599	4	8x4"			40	.322x.237	B16.9	SMLS STL
																														E-600	6	16"				.375		
									5			5													SUPPLY					E-601	13	6"				.280		
												1																		E-602	5	3"				.216		
																									504402					E-603	2	6x3"				.280x.216		
1																														E-604	2	4x3"				.237-.216		
3					2	4	2		1			7													SUPPLY				3,6	E-605	19	8"				.322		
																									504402					E-606	4	3"				.216		
												2													504402-B				3	E-607	2	10x6"				.365x.280		
												2													504402-B				3	E-608	2	16x8"			20 X 40	.312X.322		
																									504403					E-609	2	1½"			6000#	—	B16.11	FORGED STL.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-3

FRAME 2 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-3

FRAME 3 OF 3

LIST OF FITTINGS

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	S
								P.S.I.	°F							
~~504405~~				~~3~~	~~E-610~~	~~2~~	~~16"x10"~~			~~3000#~~	~~—~~	~~B16.11~~	~~FORGED STL.~~	~~A-105~~	~~LATROLET - RUN & OUTLET I.P.S. S.W.~~	~~BOILER BLOW &~~
				~~3~~	~~E-611~~	~~2~~	~~16"x6"~~				~~—~~					
				~~3~~	~~E-612~~	~~4~~	~~8"x6"~~				~~—~~					
504405					E-613	2	6"x2"			3000#	—	B16.11	FORGED STL.	A-105	LATROLET-RUN & OUTLET I.P.S. S.W.	BOILER BLOW &
					E-614	2	6"x3"				—				B.W.	
↓					E-615	4	8"x1"			↓	—	↓	↓	↓	S.W.	
504402-A 504407				8,8	E-616	2	10"			150#	—	B16.5/FLGS.	STAINLESS STL.	TYPE 304	EXPANSION JT.-FLG'D-F&D-F-F = 29"	
504407			HULL 4650 ONLY	8,8	E-617	4	8"				—				12"	
504402-A 504407				3,8	E-618	2	6"			↓	—	↓	↓	↓	22"	
500053A				1,4	E-619	2	28"			150#			STNS. ST'L.	TYPE 304	23"	DIESEL GENERATOR EXHA
500053-A				1	E-620	1	24"			150#	—	—	STAINLESS STL.	TYPE 304	= 23½"	
502207				1	E-621	1	28"			—	—	—	—	—	FLGD. MUFFLER	
504402-C				1,4	E-622	1	28"x24"			SCH. 10	.312x.250		SEAMLESS STL.	A 234 GR WPB	CONC. REDUCER-BUTT WELD	
504405-A				2	E-623	1	8"x1"			3000#	—	—	FORGED STL.	A-105	THREDOLET - I.P.S. RUN & OUTLET	
UAO				2	E-624	1	1"			—	—	—	STEEL/BRONZE	SEE REMARKS	FLGD. ADAPTER W/CAP & CHAIN	DET. "6-A" IT.5, DET. "6-B" F
504402-A				2	E-625	1	4"x4"x2½"			SCH. 40	.237x.203	B16.9	SMLS. STL	A234 GR WPB	TEE REDUCING BUTT WELD	
504402-A	504402 B			2,3	E-626	2	4"			↓	.237	↓		↓	↓	
UAO				2,3,4,6	E-627	52	8"			—	—	—	STEEL	A519 GR. 1015HR	WELDED SLEEVE	
				2,3,4,6	E-628	62	6"			—	—	—				
				2,3,4	E-629	16	5"			—	—	—		A53 TY.E/S GR.B		
				2,3,4	E-630	50	4"			—	—	—		↓		
				2,3,4	E-631	25	3"			—	—	—		A519 GR.1015HR		
↓				2,3,4,5	E-632	15	2½"			—	—	—	↓	A53 TY.E/S GR.B	↓	
504402 B				3	E-633	1	5"x2½"			SCH.40	—	B16.9	SMLS. ST'L.	A234 GRWPB	ELBOW 90° LR. BW RED.	
504402 B				3	E-634	1	8"x4"			↓	—	↓	↓	↓	CONCENTRIC REDUCER BW	
504408-H				3	E-635	1	4"			150#	—	FLGD B16.5	CAST ST'L	A-216 GR WCB	STRAINER Y TY. FLGD F&D MONEL SCREEN W/.035 PERF	
500008				3	E-636	1	8"			150#			CARB. MOLY ST'L	A204 GR B	13½" OD - 2 13/16" DIA. HOLE ORIFICE PLT.	
504402 B				3	E-637	1	12"x10"			STD	.375x.365	B16.9	SMLS. ST'L.	A234 GR WPB	ELBOW 90° LR. BW RED.	
* UAO				3,6	E-638	1	42"x44"			—	—	—	STL.	A285 GR.B	5/16" THK PL.-TRANSITION PIECE	TURBO GEN EXHAU
504405 B				3	E-639	1	36"x1"			3000#	—	—	FORGED ST'L	A-105	THREDOLET - I.P.S. RUN & OUTLET	
504402 B				3	E-640	1	5"			.40	.258	B16.9	SMLS ST'L.	A234 GR. WPB	TEE B.W.	
504402 B				3	E-641	2	5"x4"			↓	.258x.237	↓	↓	↓	CONC. RED BW	
504403 B	SUPPLY			3,4	E-642	8	¼"			3000#	—	—	FORGED ST'L.	A-105	SCR'D UNION ST'L. TO ST'L. SEAT	STRNR BLOW DOWN
504405 D				3,4,5	E-643	3	12"x½"			3000#	—	—	↓	↓	THREDOLET - I.P.S. RUN & OUTLET	
504402 B				3	E-644	2	6"x3"			40	.280x.216	B16.9	SMLS. STL.	A234 GRWPB	CONC. RED. B.W.	
504402 B				3	E-645	2	24"			10	.250				ELBOW 90° LR BW	
504402-B	504402-C	504402-D,E		3,4,6,9	E-646	10	8"			40	.322	↓	↓	↓	ELBOW 45° LR BW	
* UAO				3	E-647	2	28"			—	—	—	ST'L.	ABS GR. A	WELD SLEEVE	
* UAO				3	E-648	10	16"			—	—	—				
* UAO				3,4,6	E-649	10	12"			—	—	—		↓		
UAO				3,5,6	E-650	33	10"			—	—	—		A519 GR. 1015 H.R.	↓	
UAO				3	E-651	2	2"			—	—	—		A53 TY. E OR S GR.B	BHD. PENET. SLEEVE	
504405 B				3	E-652	2	2"			3000#	—	—	FORG. STEEL	A-105	SOCKOLET - I.P.S. RUN & OUTLET	
504403 B				3	E-653	1	½"				—	B16.11		A-234	HALF COUPLING SCR'D.	
504403 B				3	E-654	6	1"			↓	—	B16.11		↓	↓	
* UAO				3	E-655	2	21" OD X 8" I.P.S.			—	—	—	STEEL	A-BS-GRA	DOUBLER PLATE (20.4#)	
* UAO				3	E-656	2	16" IPS			—	—	—			END PLATE (40.8#) FOR 16" PIPE	
* UAO				3	E-657	1	28" IPS			—	—	—	↓	↓	(61.2#) FOR 28" PIPE	
504402-B				3	E-658	2	12"			20	.250	B16.9	SMLS ST'L.	A-234-GRWPB	ELBOW 90° LR. B.W.	
504402 B				3	E-659	2	12"x10"			20 X 40	.250X.365				CONC. RED B.W.	
504402 B				3	E-660	2	6"x2½"			40	.280X.203	↓	↓	↓	↓	
* UAO				3	E-661	30'-0"	2"x¼"			—	—	—	STEEL	ABS GRA	FLAT BAR (2"x¼")	H.P. RAIN GUARD (DET
* UAO				3	E-662	2	20" OD X 16" I.P.S.			—	—	—			20"-OD X 16" IPS X ½" THK PL.	
* UAO				3	E-663	1	12" OD X 8" I.P.S.			—	—	—	↓	↓	12"-OD X 8" IPS X ½" THK PL.	
SUPPLY				4	E-664	6	1"			3000#	—	B16.11	FORGED STL.	A-234	90° S.W. ELBOW	
↓				4	E-665	2	1"			↓	—	↓		↓	S.W. TEE	
504411	504411-B			4,9	E-666	10	5"	68	480	—	—	—	FORGED STEEL	SAE 1020	TYPE "A" CHILL RING - SCH. 40 PIPE	
	504411-B			4,9	E-667	16	5"	↓	↓	—	—	—			TYPE "B"	
				4	E-668	12	4"	360	755	—	—	—			TYPE "A"	
				4	E-669	10	4"	↓	↓	—	—	—			TYPE "B"	
↓				4	E-670	1	3"	360	755	—	—	—	↓	↓	TYPE "B"	
504403-C				4	E-671	2	½"x¼"			300#	—	B16.3	MALL IRON	A-197	REDUCING COUPLING - SCREWED	
SUPPLY				4	E-672	6	¼"				—				90°-ELBOW SCREWED	
504403-C				4	E-673	2	¼"			↓	—	↓	↓	↓	TEE - SCREWED	
				4,7'	E-674	2	—	48	480	3000#	—	B2.1	FORGED STEEL	A-105	1" FPT x ½" MPT REDUCING ADAPTER	
↓				4,7'	E-675	2	—			3000#	—	B2.1		↓	¾" FPT x ½" MPT	
SUPPLY				4,7'	E-676	1	1"x½			3000#	—	B16.11	↓	A-105	S.W. REDUCING INSERT	
504403-C				4,7'	E-677	1	1"	↓	↓	—	—	—	—	SEE REMARKS	HOSE NIPPLE W/CAP & CHAIN	DET. "6-A" IT.G, & DET
UAO				5	E-678	2	1"	360	755	—	—	—	FORGED STL.	A105	SCRD BOSS	
UAO				5,6,7	E-679	9	½"	↓	↓	—	—	—			SOCKET WELD BOSS	
504405-D				5	E-680	1	8"x½"			3000#	—	—		↓	THREDOLET RUN & OUTLET I.P.S.	
504403-D				6	E-681	1	½"			3000#		B16.11	↓	A234	TEE - S.W.	
504402-D				6	E-682	1	8"			40	.322	B16.9	SMLS STL.	A234 GR.WPB	90° ELBOW - BUTT WELD S.R.	
504403-E				7	E-683	1	1½"x¾"			3000#		B16.11	FORG STL.	A234	S.W. RED. TEE	
↓				7	E-684	1	1"x¾"x½"								↓	
Supply				7	E-685	1	¾"			↓		↓	↓	↓	S.W. TEE	
UAO				7	E-686	1	1"			150#	—	—	STL./BRZ.	—	FLGD. ADAPTER W/CAP & CHAIN	DET. "6-A" IT.6, DET "6"
UAO [illegible]				8	E-687	1 SHT	10 GA.	—	—	—	—	—	STEEL	A569	24" WIDE × 66 LONG STL. PL.	COMBUSTION AIR DUCT F
504408-E				8	E-688	1	½" F-NPT x 28" RUN			3000#	—	—	FORGED STL.	A-105	THREDOLET	CONN. FOR MANOMETER
504407-A			(HULL 4651 ONLY)	8	E-689	2	8"			150#	—	B16.5/FLGS	STAINLESS STL.	TYPE 304	EXPANSION JT.-FLGD. F&D-F-F= 18"	SAFETY VALVE ESCAPE

FITTING IDENT. NO.	PIPING PACKAGE UNIT APPLICATION																				STRUCTURAL MODULAR UNIT APPLICATION																								
	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20	UNIT 1	UNIT 2	UNIT #3	UNIT #4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT 13	UNIT	UNIT 15	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT 4	UNIT	UNIT	UNIT
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E-629																					3									5			3												
E-630																					13				4					20			4												
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*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-3

FRAME 1 OF 3

LIST OF FITTINGS

PSI	SCH NO.	ANSI DIM STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
	STD	B16.9	SMLS STL	A234 GR WPB	ELBOW 90° S.R. BW			
	STD				L.R.		NOS. 90-93	TUBE TURN PT #5
	40							
					REDUCING			*1-R
	STD				45°			
	STD							*5
	40							
					90° REDUCING			*1R
					REDUCER CONC. B.W.			*90
					ELBOW 90° S.R. BW			
					L.R.			*3
					TEE B.W.			*1
								*20
					REDUCING			*22
					REDUCER CONC. B.W.			
150#			STNS. STL.		EXPANSION JT - FLG'D - F&D F-F × 15½"			*90
3000#	—	B16.11	FORGED STL.	A 234	ELBOW 90° SOC WELD		NOTE #96	
							NOS. 174, 90-93	BONNEY FORGE
150#	—	B16.3	MALL IRON	A-197	SCR'D.			
150#	—	B16.3	MALL IRON	A-197	ELBOW 90° SCR'D.		~~NOS. 175, 90-93~~	FLAGG FIG. *1101
							NOS. 90-93	FLAGG FIG. 1001
					45°			*1102
3000#	—	B16.11	FORGED STL.	A 234	TEE S.W.		NOS. 174, 90-93	BONNEY FORGE
150#	—	B16.3	MALL IRON	A-197	SCR'D.		NOS. 175, 90-93	FLAGG FIG *1021
3000#	—	B16.11	FORGED STEEL	A 234	S.W.		NOS. 90-93	BONNEY FORGE
					REDUCING			
3000#	—		FORGED STL.	A-105	S.W. × S.W. × F.P.T.			
150#	—	B16.5	CAST STL.	A 216 GR WCB	STRAINER "Y" TY. FLG'D. F&D. MONEL SCREENS W/.033 PERF.		NOS. 174, 175, 90-93	BONNEY FORGE
600#					SCR'D.		NOS. 90-93	MUELLER FIG. 761
150#	—	B16.5			FLG'D. F&D.		NOS. 165, 175, 90-93	MUELLER FIG. 861-BC
600#					SCR'D.		NOS. 90-93	MUELLER FIG. 761
150#	—		BRONZE	B-62	MONEL SCREENS W/.033" OPENINGS		NOS. 165, 175, 90-93	MUELLER FIG. 861-BC
3000#	—		FORGED STL.	A105	UNION SOCK WELD - STL TO STL SEATS		NOS. 175, 90-93	MUELLER FIG. 351
							NOS. 174, 90-93	BONNEY FORGE
200#	—		BRONZE	B-62	C × MPT SLDR. JT.			
150#	—	B16.14	MALL IRON	A197	BUSHING SCR'D.		NOS. 90-93	FLAGG FIG. *3096 *2071
3000#	—	B16.14	FORGED STL.	A-105				
		B16.11			RED. INSERT SOCK WELD			BONNEY FORGE
					PIPE PLUG SCR'D.			
150#	—		BRONZE	B-62	TRAP THERMO. SCR'D.			
400#	—		STNLS. STEEL	A 276 TY 316			NOS. 175, 187, 90-93	SARCO TY. 9B-225 TD-50
200#	—	B16.18	BRONZE	B-62	ADAPTER - C × MPT SLDR. JT.			
3000#	—	B16.11	FORG. STEEL	A-234	CAP, PIPE		NOS. 90-93	FLAGG FIG. *3076
			FORGED STL.	A-105	WELDOLET I.P.S. RUN & OUTLET			BONNEY FORGE
					SOCKOLET - I.P.S. RUN & OUTLET		NOS. 172, 90-93	
							NOS. 171, 90-93	
					THREDOLETS		NOS. 175, 90-93	
					SOCKOLET			
3000#	—		FORGED ST'L	A-105	THREDOLET - I.P.S. RUN & OUTLET			
					WELDOLET		170, 90-93	
			STEEL		BHD. PENET. SLEEVE		172, 90-93	
	40	B16.9	SMLS STL	A 234 GR WPB	ELBOW 90° L.R. BW. REDUCING			EF-496 - FIG *2
					ELBOW 90° L.R. B.W.		NOS. 90-93	TUBE TURN PT. #1-R
								TUBE TURN PT# 1
					REDUCING			*1-R
					45°			*1
					REDUCER CONC. B.W.			*5
								*90
6000#	—	B16.11	FORGED STL.	A-105	ELBOW 45° - SOC WELD		NOS. 174, 90-93	BONNEY FORGE

ALTERATIONS

No.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
5	1-31-78		1. REVISED THE QTY. FOR: E-525(3-4), E-502(4-2), E-587(2-1), E-632(10-18), E-650(9-20). 2. DELETED E-581 & E-595. 3. CHG'D. SIZES FOR: E-586 (12"×¾" TO 12"×1"), E-643 (12"×¾" TO 12"×1½") 4. ADDED E-678, E-679 & E-680.	RHM	
6	3-21-78		1. ADDED E-681 & E-682. 2. REVISED THE SIZE FOR E638 (40"×115" TO 42"×144") 3. INCREASED THE QTY FOR: E-502(13-15), E-503(13-16), E-516(2-3), E-518(3-5), E-528(1-3), E-541(1-4), E-605(11-19), E-627(40-52), E-628(50-62), E-646(6-8), E-649(5-10), E-650(20-33), E-679(5-7). - DCR DATED 2/17/78 (IN PART)	RHM	3 31 78
7	6/30/78		1- REVISED DESIGN CRITERIA FOR AUX EXH. MN. TO AGREE W/PIPING DIA. M4650-111-EO-13 ALT. 2 2- INCR QTY OF E-679 (7-9) 3- ADDED ITEM NOS. E-683 THRU E-686	PCG	7 6 78
8	8-16-78		1- LENGTH OF ITEM E-616 CHANGED FROM 12" TO 29" 2- INDICATED QTY OF E-617 FROM 2 TO 4 REQ'D. HULL 4650 ONLY. LENGTH OF ITEM E-618 CHANGED FROM 12" TO 22" 3- ADDED ITEM E-683 FOR HULL 4651 ONLY - THE ABOVE ITEMS TO SUIT YIS-4650-22-243. 4- ADDED ITEM E-687 PER YIS 4650-22-228. 5- ADDED ITEM - E-688 PER YIS 4650-22-240.	P.G.	8 24 78
9	10-9-78 1-30-79		1. REVISE QTY. OF ITEMS E-646 FROM 8 TO 10 AS PER YIS 4650-22-271, 295; E-666 FROM 9 TO 10; E-667 FROM 14 TO 16; E-504 FROM 12 TO 13 2. E513 QTY WAS 7 NOW 9 3. E-505 QTY WAS 25 NOW 26	L.R.V. EJK	2 26 79

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	2-9-77		1. ADDED E-619, E-620, E-621 & E-622 AS PER DESIGN DEVELOPMENT	GLW	
2	4-19-77 4-26 4/11		1. INCR. E-591 FROM 1 TO 2, E-583 FROM 2 TO 3 2. ADDED PC" E-596, E-597 3. ADDED E-623 THRU E-632. 4. REVISED QTY OF E-520 (WAS 1), E-523 (WAS 1), E-582 (WAS 3), E-589 (WAS 2).	GLW RL Secc	
3	6-11-77	2-3 2-3 2 2 3	1- INCR QTY OF E-502(11-13), E-503(5-9), E-505(19-22), E-506(5-6), E-509(1-2), E-511(1-2), E-513(2-7), E-520(2-3), E-526(1-2), E-538(1-3), E-539(1-4), E-560(3-10), E-562(4-8), E-592(1-4), E-593(1-2), E-595(1-2), E605(10-11), E626(1-2), E627(5-29), E-628(5-34), E629(3-11), E-630(13-37), E631(11-18), E-632(4-5) DECR. E-564 FROM 7 TO 2 2- ADDED E-598 & E-633 THRU E-663 3- DELETED E-597 & E-610 THRU E-612 4- CHG'D THE SIZE OF E-607 (10"×4" TO 10"×6") 5- CHG'D THE SCH OF E-608 TO READ "80 × 40", IN LIEU OF "40". 6- REMOVED RES. ON E-616 THRU E-618	PCG	
4	9/12/77	ALL	1- REMOVED RESERVATION FROM FITTING NOS. E-537, E-619 & E-622. 2- DELETED "BRV" REVISED FIG. NOS. FOR ITEM NOS. E-543 THRU E-545, E-548, & E-566, E-567, E-568 3- INCREASED SIZE OF FITT. NO. E-557 FROM 5"×¾" TO 5"×1", FITT. NO. E-593 FROM 3-36×½ THREDOLET TO 5"×½" SOCKOLET, & FITT. NO. E-589 FROM 4"×½ THREDOLET TO 4"×1". 4- FTG. E-559 THRU E-563 FROM SCRD. TO S.W. & REVD. NOTES TO SUIT. 5- INCREASED AMT. REQ'D E-503 FROM 9 TO 13; " " " E-505 " 27 TO 28; " " " E-516 " 1 TO 2; " " " E-517 " 1 TO 2; " " " E-545 " 3 TO 8; " " " E-560 " 10 TO 23; " " " E-562 " 8 TO 13; " " " E-595 " 2 TO 4; " " " E-642 " 2 TO 8; " " " E-643 " 1 TO 3; " " " E-646 " 4 TO 6; " " " E-649 " 4 TO 5; " " " E-539 " 4 TO 5; " " " E-557 " 2 TO 3 6- DELETED FITTING NOS. E-642 & E-546 FROM LIST. 7- ADDED FITTING NOS. E-664 THRU E-677. 8- THE FOLLOWING FITTINGS CHANGED FROM 150# SCR'D. MALL IRON TO 3000# SOCKET WELD FORGED STEEL FITT. NOS. E-549, E-550, E-551 & E-552 9- E-570 FROM HEX BUSHING TO S.W. RED. INSERT 10- E-627 FROM 29 TO 40, E-628 34 TO 50, E-629 11 TO 16; E-630 FROM 37 TO 50, E-631 18 TO 25, E-632 5 TO 10 11- E-564 FROM SCRD. TO SW. & PRESS. FROM 150# TO 3000#	EJD.	

HULL	DESIGN	CHARGE
4651		
4650	21,340 DWT CONTAINER SHIP	8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 5 NOV. 1976
DRAWN E.J.K.
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-371-04-3
ALT. NO. 9

FITTING LIST FOR AUX. EXHAUST, L.P. BLEEDER STEAM AND ESCAPE PIPING

UAO-50139-A

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE
5	4650-111-16	ARRG'T OF PIPING LOWER LVL (P) FWD MOD. #2
4	4650-111-27	ARRG'T OF PIPING, ENGINE CASING MOD. #13
3	4650-371-04-2	FLG. GASKETS & BOLTING FOR AUX. EXH & BLEEDER STM PIPING
2	4650-371-04-1	PIPE & VLV. FOR AUX. EXH & BLEEDER STM. PIPING
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

1

M-707

ALTERATION	DATE OF ISSUE
ENGINEERING DISTRIBUTION	
OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R	
OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT - 21	
MACH. DRAFT - 22	
ELEC. DRAFT - 23	
OUTFIT DRAFT - 25	
ESTIMATING	
J. DOUGHERTY	
PRODUCTION (BCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	
YARD DISTRIBUTION	
J. SIMMONS	
PIECE RATE - 11	
TEST DEPARTMENT	
PLANNING	
GROUND ASSEMBLY	
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL	
WET DOCK	
PIPE SHOP - 52	
OUTFIT. #1 PIER	
PIPE DRAFT - 53	
BOILER SHOP - 58	
OUTSIDE MACH. - 60	
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 51	
PAINT SHOP - 78	
WELDING	
MOLD LOFT - 41	
BRACKET SHOP	
TOTAL YARD DIST.	

SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-3

FRAME 2 OF 3

LIST OF FITTINGS

DESIGN CRITERIA P.S.I.	°F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF #1	MANUFACTURER DWG OR FIG. NO. OR EQUAL
		3000#	—	B16.11	FORGED STL.	A-105	LATROLET - RUN & OUTLET IPS S.W.	BOILER BLOW & ESCAPE	NOS. 173, 90-93	BONNEY FORGE
		3000#	—	B16.11	FORGED STL.	A-105	LATROLET - RUN & OUTLET IPS S.W.	BOILER BLOW & ESCAPE		
							S.W.			
							S.W.			
		150#	—	B16.5	STAINLESS STL.	TYPE 304	EXPANSION JT.-FLG'D-F&D F.P. = 29"		NOTES 90-93 & 161	PENFLEX M-100 #15
							12"			
							22"			
		150#			STNLS. STL.	TYPE 304	23"	DIESEL GENERATOR EXHAUST		
		150#	—	—	STAINLESS STL.	TYPE 304	= 23½"		NOTE 96	
		—	—	—			FLG'D. MUFFLER			G.E. DRWG #41A219985 41A300711
		SCH. 10	.312x.250		SEAMLESS STL.	A234 GR WPB	CONC. REDUCER-BUTT WELD		NOS 90-93	TUBE TURN PT. #590
		3000#	—	—	FORGED STL.	A-105	THREDOLET - IPS. RUN & OUTLET		NOS 170, 90-93	BONNEY FORGE
		—	—		STEEL/BRONZE	SEE REMARKS	FLG'D ADAPTER W/CAP & CHAIN	DET. "6-A" IT. 6, DET. "6-B" FIG. 3, & DET. "6-C"	SPEC'L NIPPLE A53, FLG A105, CAP B62	EF-345
		SCH. 40	.237x.203	B16.9	SMLS. STL.	A234 GR WPB	TEE REDUCING BUTT WELD		NOS. 90-93	TUBE TURN PT. #22
			.237							#20
		—	—	—	STEEL	A497 GR.105 SHP	WELDED SLEEVE			EF-496 FIG. 1
		—	—	—		A53 TYPE S GR. B				
		—	—	—		A519 GR.1015 HR				
		—	—	—		A53 TYPE S GR. B				
		SCH. 40	—	B16.9	SMLS. ST'L	A234 GR WPB	ELBOW 90° LR. BW RED.			
							CONCENTRIC REDUCER BW		NOTES 90-93	TUBE TURN PT. #1-R
		150#	—	FLG'D B16.5	CAST ST'L	A216 GR WCB	STRAINER Y TY. FLG'D F&D (MONEL SCREEN 1/16" PERF)			90
		150#			CARB. MOLY ST'L	A204 GR B	13½" OD - 2 9/16" DIA. HOLE ORIFICE PLT.		NOTES 90-93 & 190	MUELLER FIG. #761
		STD	.375x.365	B16.9	SMLS. ST'L	A234 GR WPB	ELBOW 90° LR. BW RED.		VENDOR FURNISHED	RILEY-BEAIRD 986804
					STL.	A285 GR B	½" THK R.-TRANSITION PIECE	TURBO GEN EXHAUST	NOTES 90-93	TUBE TURN PT. #1-R
		3000#	—	—	FORGED STL.	A-105	THREDOLET - IPS. RUN & OUTLET		SEE DET. 4-A1 ON REF. #5	
		40	.258	B16.9	SMLS. STL.	A234 GR WPB	TEE BW		NOTES 90-93 & 170	BONNEY FORGE
			.258x.237				CONC. RED BW		NOTES 90-93	TUBE TURN PT. #20
		3000#	—	—	FORGED STL.	A-105	SCR'D UNION STL. TO STL. SEAT	STRNR. BLOW DOWN	NOTES 90-93	TUBE TURN PT. #90
		3000#	—	—			THREDOLET - IPS. RUN & OUTLET		NOTES 90-93 & 175	BONNEY FORGE
		40	.280x.216	B16.9	SMLS. STL.	A234 GR WPB	CONC. RED. B.W.		90-93 & 170	BONNEY FORGE
		10	.250				ELBOW 90° LR BW		90-93	TUBE TURN PT. #90
		40	.322				ELBOW 45° LR BW		90-93	PT. #1
		—	—	—	STL.	A53 GR. A	WELD SLEEVE		90-93	PT. #5
		—	—	—						EF-496 FIG. #1
		—	—	—		A519 GR.1015 HR				EF-496 FIG. #1
		—	—	—		A53 TYPE S GR. B	BHD. PENET. SLEEVE			2
		3000#	—	—	FORG. STEEL	A-105	SOCKOLET - IPS. RUN & OUTLET			
			—	B16.11		A-234	HALF COUPLING SCR'D.		NOTES 90-93 & 171	BONNEY FORGE
			—	B16.11					NOTES 90-93 & 175	BONNEY FORGE
8" IPS.		—	—	—	STEEL	ABS GR. A	DOUBLER PLATE (20.4#)		NOTES 90-93 & 175	BONNEY FORGE
							END PLATE (40.8#) FOR 16" PIPE		SEE DWG. M4650-111-27	
							(61.2#) FOR 28" PIPE			
		20	.250	B16.9	SMLS. ST'L	A-234 GR WPB	ELBOW 90° LR. BW		NOTES 90-93	TUBE TURN PT. #201
		20x40	.250x.365				CONC. RED B.W.			PT. #10
		40	.280x.216							PT. #90
		—	—	—	STEEL	ABS GR. A	FLAT BAR (2"x¼")	KP. RAIN GUARD (DET "18-D" ON REF #4)		
16" IPS.		—	—	—			20"-OD x 16" IPS x ½" THK R.			
8" IPS.		—	—	—			12"-OD x 8" IPS x ½" THK R.			
		3000#	—	B16.11	FORGED STL.	A-234	90° S.W. ELBOW			
							S.W. TEE		NOTES 90-93	BONNEY FORGE
68	480	—	—	—	FORGED STL.	SAE 1020	TYPE "A" CHILL RING - SCH. 40 PIPE			
		—	—	—			TYPE "B"			BETH. STL. STD EF-388 FIG. 3
360	755	—	—	—			TYPE "A"			
		—	—	—			TYPE "B"			
360	755	—	—	—			TYPE "B"			
		300#	—	B16.3	MALL IRON	A-197	REDUCING COUPLING - SCREWED			
							90° ELBOW SCREWED		NOTES - 90-93	FLAGG FIG. #1240
							TEE - SCREWED			#1201
48	450	3000#	—	B2.1	FORGED STEEL	A-105	1" FPT x ½ MPT REDUCING ADAPTER			#1221
		3000#	—	B2.1			½" FPT x ⅜ MPT			CAJON #16-RA-8
		3000#	—	B16.11		A-105	S.W. REDUCING INSERT			12-RA-8
		—	—			SEE REMARKS	HOSE NIPPLE W/CAP & CHAIN	DET. "6-A" IT. 6, & DET "6-C"		BONNEY FORGE
360	755				FORGED STL.	A105	SCR'D BOSS		NIPPLE A-53 CAP A-62	BETH. STD. EF-345
							SOCKET WELD BOSS			BETH. STD. EF-358 FIG. 7
							THREDOLET RUN & OUTLET IPS			FIG. 6
		3000#	—	B16.11		A234	TEE - S.W.		NOTES 90-93 & 170	BONNEY FORGE
		40	.322	B16.9	SMLS. STL.	A234 GR WPB	90° ELBOW - BUTT WELD SR.		90-93	
		6000#	—	B16.11	FORG. STL.	A234	S.W. RED. TEE			TUBE TURN PT. #3
										BONNEY FORGE
							S.W. TEE			
		150#	—	—	STL./BRZ.	—	FLG'D ADAPTER W/CAP & CHAIN	DET. "6-A" IT. 6, DET "6-B" FIG. #3, DET "6-C"	USE W/ VLV. E-150	B.S. EF-345
			—	—	STEEL	A569	24" WIDE x 66 LONG STL. R.	COMBUSTION AIR DUCT FOR DIESEL GENERATOR		
28 RUN		3000#	—	—	FORGED STL.	A-105	THREDOLET	CONN. FOR MANOMETER	NOTES 90-93 & 170	BONNEY FORGE
		150#			STAINLESS STL.	TYPE 304	EXPANSION JT.-FLG'D F/D F.P. = 18"	SAFETY VALVE ESCAPE	NOTES 90-93 & 161	PENFLEX M-100 #15

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1, UNIT 2, UNIT 3,4, UNIT 5, UNIT 6, UNIT 7, UNIT 8, UNIT 9, UNIT 10, UNIT, UNIT #13, UNIT 15, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT

LIST O

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	°F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL
504402					E-500	1	36"	12.5	204°	STD	.375	B16.9	SMLS. STL.
504402					E-501	2	12"			STD.	.375		
SUPPLY				3,6	E-502	15	10"			40	.365		
				3,4,6	E-503	16	6"				.280		
				9	E-504	13	5"				.258		
				3,4,9	E-505	26	4"				.237		
				3	E-506	6	3"				.216		
504402					E-507	1	6"x4"				.280-.237		
					E-508	3	5"x4"				.258-.237		
	504402-B			3	E-509	2	4"x3"				.237-.216		
					E-510	1	36			STD	.375		
	504402-B			3	E-511	2	12"			STD.	.375		
					E-512	6	10"			40	.365		
	504402-B	504402-F		3,9	E-513	9	6"				.280		
					E-514	12	4"				.237		
					E-515	1	5"				.258		
	504402-C	504402-D		4,6	E-516	3	8x6				.322-.280		
				4	E-517	2	10x8"				.365x.322		
	504402-D			6	E-518	5	8x6"				.322x.280		
					E-519	2	6x5"				.280x.258		
	504402-A	504402-B		2,5,7'	E-520	3	4x2½"	48	480		.237x.203		
				7'	E-521	1	3x2"				.216x.154		
				7'	E-522	1	5x2½"				.258x.203		
	504402-A			2,7'	E-523	2	3x1½"				.216x.145		
SUPPLY					E-524	1	10"	12.5	204°		.365		
504402				6	E-525	4	2½"				.203		
					E-526	2	6"				.280		
					E-527	2	3"				.216		
	504402-D			6	E-528	3	8"				.322		
					E-529	1	10"				.365		
					E-530	1	5x5x4"				.258-.237		
					E-531	1	8x8x4"				.322-.237		
					E-532	2	6x6x3"				.280-.216		
					E-533	2	4x4x3"				.237-.216		
					E-534	1	3x3x2"				.216-.154		
	504402-B			5	E-535	2	8x8x5"				.322-.258		
				7'	E-536	1	3x2½"	48	480°		.216x.203		
502207-A				4	E-537	1	36"	12.5	204°	150#	—	—	STNS. STL.
SUPPLY				5,7'	E-538	3	1½"	48	480°	3000#	—	B16.11	FORGED STL.
				3,4	E-539	5	2				—		
				7'	E-540	2	¾"				—		
				6,7'	E-541	4	½"				—		
				4	E-542	10	2			150#	—	B16.3	MALL IRON
				4,7'	E-543	8	½"	48	480°	150#	—	B16.3	MALL IRON
				4,7'	E-544	2	⅜"				—		
				4,7'	E-545	8	1"				—		
				4	E-546	2	2"				—		
				7'	E-547	2	¾"			3000#	—	B16.11	FORGED STL.
				4,7'	E-548	4	½"			150#	—	B16.3	MALL IRON
				4,7'	E-549	5	1"			3000#	—	B16.11	FORGED STEEL
504403	504403-C			4,7'	E-550	1	½"x¾"x¾"				—		
				4,7'	E-551	1	1"x1"x½"				—		
				4,7'	E-552	2	2"x2"x1"				—		
504403				7'	E-553	6	½"			3000#	—	—	FORGED STL.
504408					E-554	1	3"	12.5	204	150#	—	FLGS/B16.5	CAST STL.
					E-555	1	2"			600#	—	—	
					E-556	1	8"			150#	—	FLGS/B16.5	
	504408-B			4	E-557	3	1"			600#	—	—	
					E-558	2	½"			150#	—	—	BRONZE
SUPPLY				4	E-559	12	2"			3000#	—	—	FORGED STL.
				3,4	E-560	23	1"				—	—	
				4	E-561	1	¾"				—	—	
				3,4	E-562	15	½"				—	—	
				4	E-563	3	⅜"				—	—	
				3,4	E-564	2	1"			3000#	—	—	
504403					E-565	1	½"			200#	—	—	BRONZE
SUPPLY				4	E-566	1	1¼"x¾"			150#	—	B16.14	MALL IRON
SUPPLY				4	E-567	1	1"x¾"				—		
				4	E-568	2	½"x⅜"				—		
504403					E-569	2	¾"x½"			3000#	—	B16.14	FORGED STL.
SUPPLY				4	E-570	2	2"x1"				—	B16.11	
504403					E-571	2	¾"				—		
					E-572	7	½"				—		
504410					E-573	2	½"			150#	—	—	BRONZE
					E-574	1	¾"			400#	—	—	STNLS. STEEL
					E-575	2	1"			600#	—	—	
504403					E-576	1	¼"			200#	—	B16.18	BRONZE
					E-577	1	½"			3000#	—	B16.11	FORG. STEEL
504405					E-578	1	10"x4"				—	—	FORGED STL.
					E-579	3	10x½"				—	—	
					E-580	2	6"x½"				—	—	
				5	E-581	2	5"x½"				—	—	
				3,5	E-582	2	4"x½"				—	—	
					E-583	2	12"x1"				—	—	
					E-584	2	4"x2"				—	—	
					E-585	1	12"x¾"				—	—	
504405-D				5	E-586	1	12"x1"				—	—	
504405-C				4,5	E-587	1	5"x1"				—	—	
504405					E-588	1	4"x1"				—	—	
504405-C				3,4	E-589	3	4"x1"				—	—	
504405					E-590	1	5"x1"				—	—	
					E-591	1	1"x½"				—	—	
	504405-D			8	E-592	4	5"x½"				—	—	
	504405-B	504405-C		3,4	E-593	4	4"x½"				—	—	
					E-594	1	2"x¾"				—	—	
	504405-B	504405-C		3,4,5	E-595	2	5"x½"				—	—	
504405-A					E-596	1	8x1"			3000#	—	—	FORGED ST'L
~~504405-A~~				2,5	E-597	1	2½"						
[illegible]				3	E-598	1	1"			—	—	—	STEEL
504402					E-599	4	5"x4"			40	.322x.237	B16.9	SMLS. STL.
					E-600	6	16"				.375		
SUPPLY					E-601	13	6"				.280		
					E-602	5	3"				.216		
504402					E-603	2	6"x3"				.280x.216		
					E-604	2	4"x3"				.237-.216		
SUPPLY				3,6	E-605	19	8"				.322		
504402					E-606	4	3"				.216		
504402-B				5	E-607	2	10"x6"				.365x.280		
504402-B				3	E-608	2	16"x8"			20x40	.312x.322		
504403					E-609	2	1½"			6000#	—	B16.11	FORGED STL.

2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-04-3

FRAME 3 OF 3

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

FITTING IDENT. NO.	UNIT 1	UNIT 2	UNIT #3	UNIT #4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT 13	UNIT	UNIT 15	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT 4	UNIT	UNIT	UNIT
E-610																									
E-611																									
E-612																									
E-613																									
E-614																									
E-615																									
E-616													2												
E-617							2	2																	
E-618													2												
E-619													2												
E-620																						1			
E-621													1												
E-622								1																	
E-623	1																								
E-624	1																								
E-625	1																								
E-626	1									1															
E-627	5					4	19						24												
E-628	9				7		16			8			22												
E-629	3									5			3												
E-630	13				4					20			4												
E-631	11	1						1					7												
E-632	4	7								1															
E-633										1															
E-634										1															
E-635										1															
E-636										1															
E-637		1																							
E-638		1																							
E-639		1																							
E-640										1															
E-641										2															
E-642	3			3						1															
E-643		1								2															
E-644							1	1																	
E-645								2																	
E-646							4						4		2										
E-647													2												
E-648													10												
E-649		1											8												
E-650		10				2	8						13												
E-651													2												
E-652													2												
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E-656													2												
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E-659													2												
E-660													2												
E-661													30'-0"												
E-662													2												
E-663													1												
E-664	2								4																
E-665	2																								
E-666			7				2								1										
E-667			10				1								5										
E-668			6				2								4										
E-669			8				1								1										
E-670															1										
E-671	1			1																					
E-672	3			3																					
E-673	1			1																					
E-674									2																
E-675									2																
E-676									1																
E-677									1																
E-678															2										
E-679			2				2								5										
E-680	1																								
E-681							1																		
E-682															1										
E-683		1																							
E-684		1																							
E-685		1																							
E-686	1																								
E-687				1																					
E-688								1																	
E-689							1	1																	

LIST OF FITTINGS

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	
~~504405~~				~~3~~	~~E-610~~	~~2~~	~~16x10"~~			~~3000#~~	~~—~~	~~B16.11~~	~~FORGED STL.~~	~~A-105~~	~~LATROLET - RUN & OUTLET I.P.S. S.W.~~	~~BOILER BLOW &~~
				~~3~~	~~E-611~~	~~2~~	~~16x6"~~				~~—~~					
				~~3~~	~~E-612~~	~~4~~	~~8x6"~~				~~—~~					
504405					E-613	2	6x2"			3000#	—	B16.11	FORGED STL.	A-105	LATROLET-RUN & OUTLET I.P.S. S.W.	BOILER BLOW &
					E-614	2	6x3"				—				B.W.	
↓					E-615	4	8x1"			↓	—	↓	↓	↓	↓ S.W.	
504407-A				3,8	E-616	2	10"			150#	—	B16.5/FLGS.	STAINLESS STL.	TYPE 304	EXPANSION JT.-FLGD-F&D- F-F = 29"	
504407			Hull 4650 only	3,8	E-617	4	8"				—				12"	
504407-A				3,8	E-618	2	6"			↓	—	↓	↓	↓	22"	↓
500053A				1,4	E-619	2	28"			150#			STNS. ST'L.	TYPE 304	23"	DIESEL GENERATOR EXHAU
500053-A				1	E-620	1	24"			150#	—	—	STAINLESS STL.	TYPE 304	↓ = 23½"	
502207				1	E-621	1	28"			—	—	—	—	—	FLGD. MUFFLER	
504402-C				1,4	E-622	1	28"x24"			SCH.10	.312x.250		SEAMLESS STL.	A 234 GR WPB	CONC. REDUCER-BUTT WELD	↓
504405-A				2	E-623	1	8"x1"			3000#	—	—	FORGED STL.	A-105	THREDOLET- I.P.S. RUN & OUTLET	
UAO				2	E-624	1	1"			—	—	—	STEEL/BRONZE	SEE REMARKS	FLGD.ADAPTER W/CAP & CHAIN	DET. "6-A" IT.5, DET. "6-B"
504402-A				2	E-625	1	4x4x2½			Sch.40	.237x.203	B16.9	SMLS.STL	A234 GR WPB	TEE REDUCING BUTT WELD	
504402-A	504402 B			2,3	E-626	2	4"			↓	.237	↓	↓	↓	↓	
UAO				2,3,4,6	E-627	52	8"			—	—	—	STEEL	A519GR.1015HR	WELDED SLEEVE	
				2,3,4,6	E-628	62	6"			—	—	—		↓		
				2,3,4	E-629	16	5"			—	—	—		A53 TY.E/S GR.B		
				2,3,4	E-630	50	4"			—	—	—		↓		
				2,3,4	E-631	25	3"			—	—	—		A519 GR.1015HR		
↓				2,3,4,5	E-632	15	2½"			—	—	—	↓	A53 TY E or S GR.B	↓	
504402 B				3	E-633	1	5"x2½"			SCH.40	—	B16.9	SMLS. ST'L.	A-234 GRWPB	ELBOW 90° L.R. BW RED.	
504402 B				3	E-634	1	8"x4"			↓	—	↓	↓	↓	CONCENTRIC REDUCER BW	
504405-H				3	E-635	1	4"			150#	—	FLGD B16.5	CAST ST'L	A-216 GR WCB	STRAINER Y TY. FLGD F&D [illegible]	
500005				3	E-636	1	8"			150#			CARB. MOLY ST'L	A-204 GR B	13½" OD - 2 5/16" DIA. HOLE ORIFICE PLT.	
504402 B				3	E-637	1	12"x10"			STD	.375x.365	B16.9	SMLS. ST'L.	A234 GR WPB	ELBOW 90° L.R. BW RED.	
* UAO				3,6	E-638	1	42"x14¼"			—	—	—	STL.	A285 GR.B	5/16 THK PL.-TRANSITION PIECE	TURBO GEN EXHAU
504405-B				3	E-639	1	36"x1"			3000#	—	—	FORGED ST'L	A-105	THREDOLET- I.P.S. RUN & OUTLET	
504402 B				3	E-640	1	5"			40	.258	B16.9	SMLS ST'L.	A234 GR.WPB	TEE B.W.	
504402 B				3	E-641	2	5"x4"			↓	.258x.237	↓	↓	↓	CONC. RED BW	
504403 B	SUPPLY			3,4	E-642	8	¼"			3000#	—	—	FORGED ST'L.	A-105	SCR'D UNION ST'L. TO ST'L. SEAT.	STRNR BLOW DOWN
504405-D				3,4,5	E-643	3	12"x½"			3000#	—	—	↓	↓	THREDOLET - I.P.S. RUN & OUTLET	
504402 B				3	E-644	2	6"x3"			40	.280x.216	B16.9	SMLS. ST'L.	A234 GR WPB	CONC. RED. B.W.	
504402 B				3	E-645	2	24"			10	.250				ELBOW 90° LR BW	
504402-B	504402-C	504402-D,E		3,4,6,9	E-646	10	8"			40	.322	↓	↓	↓	ELBOW 45° LR BW	
* UAO				3	E-647	2	28"			—	—	—	ST'L.	ABS GR.A	WELD SLEEVE	
* UAO				3	E-648	10	16"			—	—	—				
* UAO				3,4,6	E-649	10	12"			—	—	—		↓		
UAO				3,5,6	E-650	33	10"			—	—	—		A519 GR.1015 H.F.	↓	
UAO				3	E-651	2	2"			—	—	—	↓	A53 TY E or S GR.B	BHD. PENET. SLEEVE	
504405-B				3	E-652	2	2"			3000#	—	—	FORG. STEEL	A-105	SOCKOLET- I.P.S. RUN & OUTLET	
504403-B				3	E-653	1	½"				—	B16.11		A-234	HALF COUPLING SCR'D.	
504403-B				3	E-654	6	1"			↓	—	B16.11	↓	↓	↓	
* UAO				3	E-655	2	21" OD x 8" I.P.S.			—	—	—	STEEL	ABS-GR A	DOUBLER PLATE (20.4#)	
* UAO				3	E-656	2	16" I.P.S.			—	—	—			END PLATE (40.8#) FOR 16" PIPE	
* UAO				3	E-657	1	28" I.P.S.			—	—	—	↓	↓	(61.2#) FOR 28" PIPE	
504402-B				3	E-658	2	12"			20	.250	B16.9	SMLS ST'L.	A-234-GR WPB	ELBOW 90° LR. B.W.	
504402 B				3	E-659	2	12"x10"			20x40	.250x.365				CONC. RED B.W.	
504402 B				3	E-660	2	6"x2½"			40	.280x.203	↓	↓	↓	↓	
* UAO				3	E-661	30'-0"	2"x¼"			—	—	—	STEEL	ABS GR A	FLAT BAR (2"x¼")	KP. RAIN GUARD (DET
* UAO				3	E-662	2	20"OD x 16" I.P.S.			—	—	—			20"-OD x 16" IPS x ½" THK PL.	
* UAO				3	E-663	1	12"OD x 8" I.P.S.			—	—	—	↓	↓	12"-OD x 8" IPS x ½" THK PL.	↓
SUPPLY				4	E-664	6	1"			3000#	—	B16.11	FORGED STL.	A-234	90° S.W. ELBOW	
↓				4	E-665	2	1"			↓	—	↓	↓	↓	S.W. TEE	
504411	504411-B			4,9	E-666	10	5"	68	480	—	—	—	FORGED STEEL	SAE 1020	TYPE "A" CHILL RING - SCH. 40 PIPE	
	504411-B			4,9	E-667	16	5"	↓	↓	—	—	—			TYPE "B"	
				4	E-668	12	4"	360	755	—	—	—			TYPE "A"	
				4	E-669	10	4"	↓	↓	—	—	—			TYPE "B"	
↓				4	E-670	1	3"	360	755	—	—	—	↓	↓	TYPE "B"	
504403-C				4	E-671	2	½"x¼"			300#	—	B16.3	MALL IRON	A-197	REDUCING COUPLING - SCREWED	
SUPPLY				4	E-672	6	¼"				—				90°-ELBOW SCREWED	
504403-C				4	E-673	2	¼"			↓	—	↓	↓	↓	TEE - SCREWED	
				4,7	E-674	2	—	48	480	3000#	—	B2.1	FORGED STEEL	A-105	1" FPT x ½" MPT REDUCING ADAPTER	
↓				4,7	E-675	2	—			3000#	—	B2.1		↓	½" FPT x ½" MPT ↓	
SUPPLY				4,7	E-676	1	1"x½			3000#	—	B16.11	↓	A-105	S.W. REDUCING INSERT	
504403-C				4,7	E-677	1	1"	↓	↓	—	—	—	—	SEE REMARKS	HOSE NIPPLE W/CAP & CHAIN	DET. "6-A" IT.6, & DET
UAO				5	E-678	2	1"	360	755	—	—	—	FORGED STL.	A105	SCR'D BOSS	
UAO				5,6,7	E-679	9	½"	↓	↓	—	—	—			SOCKET WELD BOSS	
504405-D				6	E-680	1	8"x½"			3000#	—	—		↓	THREDOLET RUN & OUTLET I.P.S.	
504403-D				6	E-681	1	½"			3000#		B16.11	↓	A234	TEE - S.W.	
504402-D				6	E-682	1	8"			40	.322	B16.9	SMLS. STL.	A234 GR.WPB	90° ELBOW - BUTT WELD S.R.	
504403-E				7	E-683	1	1½"x¾"			3000#		B16.11	FORG. STL.	A234	S.W. RED. TEE	
↓				7	E-684	1	1"x¾"x¾"								↓	
Supply				7	E-685	1	¾"			↓		↓	↓	↓	S.W. TEE	
UAO				7	E-686	1	1"			150#	—	—	STL./BRZ.	—	FLGD. ADAPTER W/CAP & CHAIN	DET. "6-A" IT.6, DET "6-
UAO 501331-A				8	E-687	1 SHT	10 GA.	—	—	—	—	—	STEEL	A569	24" WIDE x 66" LONG STL. PL.	COMBUSTION AIR DUCT F
504405-E				8	E-688	1	½" F-NPT x 28" RUN		—	3000#	—	—	FORGED STL.	A-105	THREDOLET	CONN. FOR MANOMETER
504407-A			(HULL 4651 ONLY)	8	E-689	2	8"			150#	—	B16.5/FLGS	STAINLESS STL.	TYPE 304	EXPANSION JT.-FLGD. F&D. F-F = 18"	SAFETY VALVE ESCAPE

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-1

FRAME 1 OF 2

LIST OF PIPES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
[illegible]		[illegible]	S-1	[illegible]	—	[illegible]	10"	120	.843	945	970	B36.10	SEAMLESS CHROME MOLY STEEL	A335 GR. P11	MAIN STEAM - SUPERHEATED	I	1590	NOS. 128,136
		[illegible]	S-2	[illegible]		[illegible]	8"		.718									
		[illegible]	S-3	192'	—	192'	5"		.500									
[illegible]		[illegible]	S-4	40'	—	40'	4"		.438									
		[illegible]	S-5	[illegible]	—	[illegible]	3"	80	.300									
		[illegible]	S-6	169'		169'	1"		.179									
		[illegible]	S-7	[illegible]	—	[illegible]	3/4"		.154									
		[illegible]	S-8	[illegible]	—	[illegible]	2"		.218									
[illegible]		5	S-9	1'-0"	—	1'-0"	[illegible]	XXH	.308									
[illegible]		[illegible]	S-12	90'-0"	—	90'-0"	6"	80	.432	1005	540	B36.10	SEAMLESS STEEL	A106 GR. B	MAIN STEAM - SATURATED STEAM	I	1650	NOS. 128,135,136
[illegible]		[illegible]	S-13	[illegible]	—	[illegible]	1"		.179						- WATER WALL DRAINS AND DRUM VENT			
		[illegible]	S-14	[illegible]	—	[illegible]	3/4"		.154						- SATURATED STEAM VENT			
		[illegible]	S-15	[illegible]	—	[illegible]	1/2"		.147						- BLR. DRUM TEST CONN. [illegible]			

LIST OF VALVES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT NO.	VALVE IDENT.	AMT REQ'D	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD.	ANSI DIM. STD.	BODY MATERIAL	A.S.T.M. SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. SEE NOTE NO. 4
[illegible]			[illegible]	[illegible]	8"	945	970	900#	B16.10	CAST CHROME MOLY	A217 GR. WC6	STAIN. STL.	STAIN. STL.	STAIN. STL.	—	FLGD. F.D.	B16.5	GLOBE-STOP CHECK-NON CHATTERING TYPE	SEE NOTE NOS. 2,3,4,7,8,9, 24,25,57,58,90,91,92,93,95	EDWARDS FIG. #4006
[illegible]			[illegible]	[illegible]	8"										—			GLOBE-STOP CHECK-NON CHATTERING TYPE	SEE NOTE NOS. 2,3,4,7,8, 9,24,26,57,58,90,91,92,93,95	EDWARDS FIG. #4006
[illegible]			[illegible]	[illegible]	8"										—			GLOBE	SEE NOTE NOS. 2,3,4,8,9, 24,26,57,58,90,91,92,93,95	EDWARDS FIG. #4016
[illegible]			[illegible]	[illegible]	[illegible]										—			GLOBE	SEE NOTE NOS. 2,3,4,8,9, 24,26,57,58,90,91,92,93,95	EDWARDS FIG. #4016
[illegible]			S-103	[illegible]	4"										—			GLOBE	NOS. 2,4,8,9,90,91,92,93,95	EDWARDS FIG. #4016
[illegible]			S-104	[illegible]	3"										—			GLOBE-STOP CHECK-NON CHATTERING TYPE	NOS. 2,4,8,9,90,91,92,93,95	FIG. #4006
[illegible]			S-105	[illegible]	1"										—			GLOBE	NOS. 2,4,8,9,90,91,92,93,95	FIG. #4016
[illegible]		[illegible]	S-106	26	1"			1500#		FORGED ALLOY STL.	A182 GR. F11				—				NOS. 4,5,90,91,92,93,95	FIG. #1028
[illegible]		[illegible]	S-107	32	3/4"										—					
[illegible]		[illegible]	S-108	4	1/2"	1005	540			FORGED STEEL	A105				—					
		[illegible]	S-109	1	4"	945	970								—			DIAPHRAGM CONTROL VALVE	SEE NOTE NO. 96	[illegible]
502100	502100-E	3,5	S-110	6	3/4"	1005	540	600#	B16.10	FORGED STEEL	A105	STAIN. STL.	STAIN. STL.	STAIN. STL.	—			GLOBE	NOS. 4,5,90,91,92,93,95	EDWARDS FIG. #828
[illegible]		[illegible]	S-111	4	5"	945	970	900#		CAST CHROME MOLY	A217 GR. WC6				—			GATE	NOS. 2,4,8,9,90,91,92,93,95	WALWORTH FIG. 5247 [illegible]
[illegible]		[illegible]	S-112	20	1"	1005	540	1500#		FORGED STEEL	A105							GLOBE	NOS. 4,5,90,91,92,93,95	EDWARDS FIG. #1028

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	3-7-76		1 DECREASE QTY. OF S-105 FROM 5 TO 1 2 ADDED S-111 ABOVE ALT. TO SUIT BOILER REQUIREMENTS 3 CHANGED SIZE OF VALVE NO. S-110 FROM 1/2" TO 3/4" 4 ADDED PIPES S-1 THRU S-7 AND S-12 THRU S-15 AND VALVE S-112 5 DECR. QTY. OF S-106 FROM 40 TO 20 6 REVISED TYPE OF MATERIAL FOR S-108 FROM FORGED ALLOY STEEL TO FORGED STEEL	G.L.W. G.L.W.	G.G. SHAFF LTR. 5-17-77
2	6/15/77		1. LIST OF PIPES: REVISED QTY OF [illegible] FROM 20' TO 22' S-3 120' 187' S-6 20' 144' S-7 20' 50' S-13 40' 112'	AG	G.G.S. LTR. DATED 8-30-77
3	[illegible]		1 ADDED S-8 2 REVISED SIZE OF VALVE S-109 FROM 3" TO 4" 3 REVISED QTY. OF ITEMS: S-3 FROM 187 TO 192', S-6 FROM 144 TO 169', S-106 FROM 20 TO 26	L.P.K.	[illegible]
4	1-31-77		1 REVISED ALLOCATIONS OF THE FOLLOWING ITEMS: S-7, S-14, S-107. 2 REVISED QTY. OF IT. S-108 FROM 2 TO 4	L.P.K.	[illegible]
5	8/28/78		1-REVISED DESIGN CRITERIA FOR PIPES AND VALVES TO AGREE WITH LATEST DIAGRAM. 2-ADDED PIPE NO. S-9 TO MATERIAL LIST. 3-INCREASED AMT. REQ'D. VALVE NO. S-110 FROM 4 TO 6 PER Y.I.S. NO. 4650-22-258.	F.J.D.	[illegible]
6	10-4-78		1-ITEM S-4 INCR. FROM 30' TO 40' PER Y.I.S. M-4650-22-283	P.G.	[illegible]

HULL	DESIGN	CHARGE
4651		8450
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 21 AUG. 1976
DRAWN G.L.W.
APPROVED
TRACED
APPROVED
CHECKED [illegible]
APPROVED [illegible]

PLAN NO. M-4650-371-09-1
ALT. NO. 6

PIPE & VALVE LIST FOR MAIN STEAM PIPING

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	15-6-77				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

1

M-709

DATE OF ISSUE

ALTERATION
ENGINEERING DISTRIBUTION
MAIL: OWNERS; AMERICAN BUREAU; LLOYD'S R.S.; U.S.M.A.; U.S. NAVY; U.S.C.G.; JOINER CONT'R
INSPECTION: OWNER'S INSP; AM. BU. INSP; LLOYD'S INSP; U.S.M.A. INSP; U.S. NAVY INSP; U.S.C.G. INSP
OFFICE: HULL DRAFT - 21; MACH. DRAFT - 22; ELEC. DRAFT - 23; OUTFIT DRAFT - 25; ESTIMATING
MISC.: PRODUCTION (SCO); ORDER DEPT.; JOINER CONT'R
TOTAL ENG'R DIST.
YARD DISTRIBUTION
YARD: PIECE RATE - 11; TEST DEPARTMENT; GROUND ASSEMBLY
STRUCTURAL: NO. WAY; NO. WAY; NO. WAY; NO. WAY; STRUCT. SUPER.; OPTICAL DETAIL; WET DOCK
MACH'Y & OUTFIT: PIPE SHOP - 53; OUTFIT #1 PIER; PIPE DRAFT - 62; BOILER SHOP - 58; OUTSIDE MACH. - 60; ELECTRIC SHOP - 71; SHEET MET. SHOP - 76; COPPER SHOP - 51; PAINT SHOP - 75
OTHER: WELDING; MOLD LOFT - 41; BRACKET SHOP
TOTAL YARD DIST.

15.6 90 FT

M-4650-371-09-1

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-1

FRAME 2 OF 2

LIST OF PIPES

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #	UNIT #6	UNIT #7	UNIT #8	REQUISITION NO			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH NO.	WALL THK	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM STD	DESCRIPTION	A.S.T.M. SPEC.	SE
22'-0								502144				1,2	S-1	22'-0"	—	22'-0"	10"	120	.843	945	970	B36.10	SEAMLESS CHROME MOLY STEEL	A 335 GR. P 11	MAIN STEAM - SUPERHEATED
17'-0	20'	15'	20'									1	S-2	120'-0"		120'-0"	8"		.718						
	32'	60'	60'		40'				502144-A			1,2,3	S-3	192'	—	192'	5"		.500						
		6'	6'			14'	14'		502144-D			1,6	S-4	40'	—	40'	4"		.438						
												1	S-5	10'-0"	—	10'-0"	3"	80	.300						
		72'	72'				25'		502144-A	502144-B		1,2,3	S-6	169'		169'	1"		.179						
		25'	25'		1'							1,2,4	S-7	50'-0"	—	50'-0"	¾"		.154						
		6'	6'					502144-B				3	S-8	1'-0"	—	1'-0"	2"		.218						
						6'	6'	502144-C				5	S-9	1'-0"	—	1'-0"	¾"	XXH	.308						
						30'	30'	502144				1	S-12	60'-0"	—	60'-0"	6"	80	.432	1005	540	B36.10	SEAMLESS STEEL	A106 GR. B	MAIN STEAM-SATURATED STE
		56'	56'				5'		502144-A			1,2	S-13	112'-0"	—	112'-0"	1"		.179						- WATER WALL DR
							4					1,4	S-14	10'-0"	—	10'-0"	¾"		.154						- SATURATED STEA
							5'					1	S-15	10'-0"	—	10'-0"	½"		.147						- BLK. DRUM TEST

LIST OF VALVES

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #	UNIT #6	UNIT #7	UNIT #8	REQUISITION NO			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D	END TYPE	ANSI DIM STD	
		1						502100					S-100R	1	8"	945	970	900#	B16.10	CAST CHROME MOLY	A 217 GR. WC6	STAIN. STL	STAIN. STL	STAIN. STL	—	[illegible]	B16.5	GLOBE-S
			1					502100					S-100L	1	8"										—			GLOBE-S
1								502100					S-101L	1	8"										—			GLOBE
	1							502100					S-102L	1	8"										—			GLOBE
						1	1	502100					S-103	2	4"										—			GLOBE
		1	1										S-104	2	5"										—			GLOBE-ST
					1							1	S-105	1	5"										—			GLOBE
		8	8			2	2		502100-C			1,3	S-106	26	1"			1500#		FORGED ALLOY STL	A182 GR. F11				—			
2	2	12	12		4							4	S-107	32	¾"										—			
						2	2		502100-D			1,6	S-108	4	½"	1005	540			FORGED STEEL	A105				—			
		1	1					—	—	—		5	S-109	2	4"	945	970	—	—	—	—	—	—	—	—			DIAPHRAG
						3	3	502100	502100-F			1,5	S-110	6	¾"	1005	540	600#	B16.10	FORGED STEEL	A105	STAIN. STL	STAIN. STL	STAIN. STL	—			GLOBE
		2	2					502100-A				1	S-111	4	5"	945	970	900#		CAST CHROME MOLY	A 217 GR. WC6				—			GATE
		8	8			2	2	502100-B				1	S-112	20	1"	1005	540	1500#		FORGED STEEL	A105				—			GLOBE

529
LAN NO.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-371-09-2

NOV 1980 10X

FRAME 1 OF 2

LIST OF FLANGES

REQUISITION NO.	ALT NO	FLANGE IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD	MATERIAL	ASTM SPEC	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF #1	CAT. OR DRWG. NO.
[illegible]	[illegible]	S-200	[illegible]	10"	[illegible]	[illegible]	1500"	900"	B16.5	FGD CHROME MOLY	A 182 GR F 11	FLANGE-WELDING NECK F.F.D. BORE FOR SCH 120 PIPE	MAIN STEAM SUPERHEATED STEAM		NOS. 90, 91, 92 & 93	TUBE TURN PT. #34
[illegible]	[illegible]	S-201	[illegible]	8"												#34
[illegible]	[illegible]	S-202	28	5"												#34
[illegible]	[illegible]	S-203	[illegible]	4"												#34
[illegible]	[illegible]	S-204	[illegible]	3"								SCH 80				#34
		S-205	[illegible]	2"				1500"				FLANGE-SOCK WELD F.F.D.				#1558
	[illegible]	S-206	[illegible]	1"												#1558
[illegible]	[illegible]	S-207	[illegible]	¾"												#1558
[illegible]	[illegible]	S-212	[illegible]	[illegible]	[illegible]	540	1650"	600"	B16.5	FORGED STEEL	A 105	FLANGE-WELDING NECK F.F.D. BORE FOR SCH. 80 PIPE	MAIN STEAM SATURATED STEAM		NOS. 90, 91, 92 & 93	TUBE TURN PT. #33
[illegible]	[illegible]	S-213	[illegible]	[illegible]				1500"				FLANGE-SOCK WELD F.F.D.	WTR. WALL DR. & STM DRUM VENT			#1558
[illegible]	3, 5	S-214	[illegible]	[illegible]				600"					SATURATED STEAM VENT			#152
[illegible]	4	S-215	[illegible]	[illegible]				1500"					BLR DRUM TEST CONN.			#1558
[illegible]	3	S-216	[illegible]	6"				[illegible]	[illegible]			ORIFICE WELD NECK PLUG END	SATURATED STEAM			#166
[illegible]	4	S-217	2	[illegible]					B16.5			FLANGE SOC WELD REDUCING F.F.D.	ORIFICE CONN.			152 MOD
[illegible]	5	S-218	2	½"				600"				BORE FOR XXH PIPE	VENT			#152
	5	S-219	2	⅜"								BLIND				#73

LIST OF GASKETS

REQUISITION NO.	ALT. NO	GASKET IDENT NO	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
[illegible]	[illegible]	S-300	[illegible]	10"	[illegible]	[illegible]	1500"	900"	—	STAINLESS STEEL	TYPE 304	GASKET-SPIRAL WOUND - STNS. STL. OUTER RING				FLEXITALLIC "CG"
[illegible]	[illegible]	S-301	[illegible]	8"					—							
[illegible]	[illegible]	S-302	23	5"					—							
[illegible]	[illegible]	S-303	[illegible]	4"					—							
		S-304	[illegible]	3"												
		S-305	[illegible]	2"				1500"	—							
		S-306	52	1"												
[illegible]	[illegible]	S-307	46	¾"					—							
[illegible]	[illegible]	S-308	14	1½"												
[illegible]	[illegible]	S-309	[illegible]	[illegible]												
[illegible]	[illegible]	S-310	[illegible]	[illegible]												
[illegible]	[illegible]	S-312	[illegible]	6"	[illegible]	[illegible]	1050"	600"	—	STAINLESS STEEL	TYPE 304	GASKET-SPIRAL WOUND - STNS. STL. OUTER RING				FLEXITALLIC "CG"
[illegible]	5	S-313	[illegible]	⅜"				600"								

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.	ALT NO	BOLTING IDENT NO.	AMT REQ'D	STUDS MATERIAL ASTM	STUDS DIA	STUDS LGTH	STUDS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA	BOLTS LGTH	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	SERVICE	CODE NO	REMARKS
[illegible]	[illegible]	S-400	[illegible]	[illegible]	1½	[illegible]	[illegible]	A 194 GR 3	1½	[illegible]	[illegible]	955								FOR 10" 900" FLANGE		
[illegible]	[illegible]	S-401	132		1⅜	[illegible]			1⅜											8"		
[illegible]	[illegible]	S-402	[illegible]		[illegible]	[illegible]			1⅛											5"		
[illegible]	[illegible]	S-403	[illegible]		[illegible]	[illegible]			1⅛											4"		
[illegible]	[illegible]	S-404	[illegible]		[illegible]	[illegible]	[illegible]		⅞	[illegible]										3"		
[illegible]	[illegible]	S-405	[illegible]		[illegible]	6"			⅞											2" 1500"		
[illegible]	[illegible]	S-406	[illegible]		[illegible]	4¼			[illegible]											1"		
[illegible]	[illegible]	S-407	184		[illegible]	4¼			⅝											¾"		
[illegible]	[illegible]	S-408	[illegible]		[illegible]	[illegible]			[illegible]											2½"		
[illegible]	[illegible]	S-409	[illegible]		[illegible]	[illegible]			[illegible]											1½"		
[illegible]	[illegible]	S-410	[illegible]		1⅛	[illegible]			1⅛"													
[illegible]	[illegible]	S-412	[illegible]	[illegible]	1"	[illegible]	[illegible]	A 194 GR 1	1"	[illegible]	250	540								FOR 6" 600" FLANGE		
[illegible]	[illegible]	S-413	100		⅞	4¾			[illegible]											1" 1500"		
[illegible]	[illegible]	S-414	40		⅝	4¾			⅝											¾		
[illegible]	[illegible]	S-415	48		½	4"			½											½"		
[illegible]	[illegible]	S-416	28		1"	7"			1"											6"-600" ORIFICE		
[illegible]	5	S-417	[illegible]		½"	3¼"			½"											⅜"-600" FLANGE		

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	5-15-77		1. LIST OF FLANGES QTY OF ITM S-202 CHG'D FROM 12 TO 28 2. LIST OF GASKETS QTY OF ITMS: S-302 CHG'D FROM 10 TO 22, S-307 " " 25 TO 31 3. LIST OF STUDS QTY OF ITMS: S-402 CHG'D FROM 80 TO 176, S-407 " " 40 TO 124	A.G.	4650-51 Y.I.S. DATED 8-30-77
2	9-9-77		1. REVISED QTY. OF ITEMS S-200 FROM 2 TO 3, S-203 FROM 6 TO 13, S-204 FROM 5 TO 1, S-206 FROM 20 TO 19, S-207 FROM 20 TO 10, S-212 FROM 12 TO 8, S-213 FROM 20 TO 23, S-214 FROM 8 TO 9, S-302 FROM 22 TO 23, S-303 FROM 6 TO 12, S-304 FROM 5 TO 1, S-306 FROM 50 TO 52, S-307 FROM 31 TO 37, S-308 FROM 4 TO 12, S-402 FROM 176 TO 184, S-403 FROM 48 TO 96, S-404 FROM 40 TO 16, S-406 FROM 100 TO 128, S-407 FROM 124 TO 148, S-412 FROM 36 TO 72, S-415 FROM 16 TO 48, S-312 FROM 8 TO 6	L.P.K.	9-14-77 JW
3	12-1-77		1- ADDED S-216 PER Y.I.S. NO. 4650-22-80. 2- ADDED S-309, S-310, S-408, S-409 & S-410.	PCG	12/5/77 [illegible]
4	1-31-78		1. ADDED ITEMS: S-217 AND S-416 2. REVISED QTY. OF ITEMS: S-201 FROM 10 TO 13, S-215 FROM 4 TO 6, S-307 FROM 37 TO 46, S-308 FROM 12 TO 14, S-407 FROM 148 TO 184	L.P.K.	[illegible] GJa
5	8/29/78		1- ADDED FLANGES NOS. S-218 & S-219 TO LIST PER Y.I.S NO. 4650-22-258, DECREASED PRESS. STD. OF FLANGES NO. S-214. 2- ADDED GASKETS NO. S-313 TO LIST PER Y.I.S. NO. 4650-22-258., IN GASKETS LIST ADDED (STNS. STL. OUTER RING) DESCRIPTION TYPE. 3- ADDED S-417 TO STUD LIST PER Y.I.S. NO. 4650-22-258, INCREASED LENGTH OF STUDS NO. S-405 PER Y.I.S. NO. 4650-22-185.	F.J.D.	9/7/78 GJa

HULL	DESIGN	CHARGE
8451	27,340 DWT CONTAINERSHIP	10-8450 [illegible]
8450		10-8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 4 NOV. 1976
DRAWN G. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-371-09-2
ALT. NO. 5

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR MAIN STEAM SYSTEM.

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-6-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

M-710

DATE OF ISSUE

ALTERATION
ENGINEERING DISTRIBUTION
MAIL: OWNERS, AMERICAN BUREAU, LLOYD'S R.S., U.S.M.A., U.S. NAVY, U.S.C.G., JOINER CONT'R.
INSPECTION: OWNER'S INSP., AM. BU. INSP., LLOYD'S INSP., U.S.M.A. INSP., U.S. NAVY INSP., U.S.C.G. INSP.
OFFICE: HULL DRAFT.-21, MACH. DRAFT.-22, ELEC. DRAFT.-23, OUTFIT DRAFT.-25, ESTIMATING, J. DOUGHERTY (LTD)
MISC.: PRODUCTION (BCD), ORDER DEPT., JOINER CONT'YARD
TOTAL ENG'R. DIST.
YARD DISTRIBUTION
YARD: J. SIMMONS, PIECE RATE-11, TEST DEPARTMENT, [illegible], ROUND ASSEMBLY
STRUCTURAL: NO. WAY, NO. WAY, NO. WAY, NO. WAY, STRUCT. SUPER., OPTICAL DETAIL-45, WET DOCK
MACH'Y & OUTFIT: PIPE SHOP-52, OUTFIT #1 PIER, PIPE DRAFT-52, BOILER SHOP-58, OUTSIDE MACH.-60, D-MATIC, ELECTRIC SHOP-70, SHEET MET. SHOP-74, COPPER SHOP-51, PAINT SHOP-75, WELDING
OTHER: MOLD LOFT-41, BRACKET SHOP
TOTAL YARD DIST.

4650-51 ALT 1
4650-51 ALT 2
4650-51 ALT 3
4650-51 ALT 4
4650-51 ALT 5

SQ. FT.

M-4650-371-09-02

LIST OF FLANGES

PIPING PACKAGE UNIT APPLICATION: UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	REQUISITION NO.			ALT NO.	FLANGE IDENT NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE		S
3								502101	502101-C		2	S-200	3	10"	871	955	1590#	900#	B16.5	FGD CHROME MOLY	A 182 GR F11	FLANGE - WELDING NECK F.F.D.	BORE FOR SCH 120 PIPE	MAIN STEAM SUPERHEAT
2	2	4	4									S-201	12	8"										
	4	9	10		5				502101-B		1	S-202	28	5"										
		3	3			2	2		502101-C		2	S-203	13	4"										
					1						2	S-204	1	3"									SCH. 80	
		1	1									S-205	2	2"				1500#				FLANGE - SOCK WELD F.F.D.		
		8	8				3				2	S-206	19	1"										
		6	6		1				502101-F		1,4	S-207	18	3/4"										
						4	4	502101			2	S-212	8	6"	950	540	1650#	600#	B16.5	FORGED STEEL	A 105	FLANGE - WELDING NECK F.F.D.	BORE FOR SCH 80 PIPE	MAIN STEAM SATURATED
		9	8			3	3		502101-C		2	S-213	23	1"				1500#				FLANGE - SOCK WELD F.F.D.		WTR WALL D
					1	4	4				2,5	S-214	9	3/4"				600#						SATURATED
						2	4		502101-F		4	S-215	6	1/2"				1500#						B.K. DRUM
						1	1	502101-D			5	S-216	2	6"				600#	B16.36			ORIFICE WELD NECK PLUG END		SATURAT
						1	1	502101-F			4	S-217	2	4½" O.D. x ½"					B16.5			FLANGE SOC WELD REDUCING F.F.D.		
								502101-G			5	S-218	2	3/4"				600#					BORE FOR XXH PIPE	
											5	S-219	2	3/4"								BLIND		

LIST OF GASKETS

PIPING PACKAGE UNIT APPLICATION: UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT 13	REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE
2									502124				S-300	2	10"	871	955	1590#	900#	—	STAINLESS STEEL	TYPE 347	GASKET - SPIRAL WOUND - STNS. STL. OUTER RING
2	3	3	3										S-301	11	8"					—			
	2	9	8		4					502124-B		1,2	S-302	23	5"					—			
		4	4			2	2			502124-C		2	S-303	12	4"					—			
					1							2	S-304	1	3"					—			
		1	1										S-305	2	2"				1500#	—			
		24	24				4					2	S-306	52	1"					—			
2	2	15	15		6	1	1			502124-B	502124-E 502124-F	1,2,4	S-307	46	3/4"					—			
						6	8			502124-C	502124-F	2,4	S-308	14	1/2"								
								2	502124-E			5	S-309	2	2½"					—			
								2				5	S-310	2	1½"					—			
						3	3		SUPPLY			2	S-312	6	6"	950	540	1650#	600#	—	STAINLESS STEEL	TYPE 304	GASKET - SPIRAL WOUND - STNS. STL. OUTER RING
						4	4		502124-G			5	S-313	4	3/4"				600#				

LIST OF STUDS, BOLTS & NUTS

PIPING PACKAGE UNIT APPLICATION: UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT 13	REQUISITION NO.		NUTS	ALT NO	BOLTING IDENT NO.	AMT REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	ASH. HEX NUTS SEMI-FINISHED (2) PER STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.
32									502129		502130-A		S-400	32	A 193 GR B16	1 3/8"	9"	B1.1 8UN-2A	A 194 GR 3	1 3/8"	B18.2.2 B1.1 8UN-2B	871	955							
24	36	36	36										S-401	132		1 3/8"	8 3/4"			1 3/8"										
	16	12	64		32					502129-A&C	502129-B&D	1,2	S-402	184		1 1/4"	7 3/4"			1 1/4"										
		32	32			16	16				502129-A 502129-D	2	S-403	96		1 1/8"	6 1/2"			1 1/8"										
		4	4		8						502130-A	2	S-404	16		7/8"	5 1/2"	B1.1 UNC-2A		7/8"	B18.2.2 B1.1 UNC-2B									
		8	8								502129-G	5	S-405	16		7/8"	6"			7/8"										
		48	48			16	16				502130-A	2	S-406	128		7/8"	4 3/4"			7/8"										
8	8	60	60		24	12	12			502129-A&C	502130-A 502129-B&D	1,2,4	S-407	184		3/4"	4 1/2"			3/4"										
								16	502129-E	502130-E		3	S-408	16		1"	6"			1"										
								8				3	S-409	8		1"	5 1/4"			1"										
						12	12					3	S-410	24		1 1/8"	8 1/8"			1 1/8"										
						36	36		502129			2	S-412	72	A 193 GR B7	1"	6 1/2"	B1.1 UNC-2A	A 194 GR 1	1"	B18.2.2 B1.1 UNC-2B	750	540							
													S-413	100		7/8"	4 3/4"			7/8"										
													S-414	40		3/4"	4 1/4"			3/4"										
						24	24					2	S-416	48		3/4"	4"			3/4"										
						12	12		502129-F			4	S-416	24		1"	7"			1"										
						16	16		502129-H			5	S-417	16		5/8"	3 1/4"			5/8"										

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-2

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-2

FRAME 1 OF 2

LIST OF FLANGES

REQUISITION NO.	ALT NO.	FLANGE IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD	MATERIAL	ASTM SPEC	TYPE		SERVICE	CODE NO.	SPECIAL NOTES FROM REF #1	CAT. OR DRWG. NO.
[illegible]	[illegible]	S-200	[illegible]	10"	[illegible]	[illegible]	1500*	900*	B16.5	1¼ CHROME MOLY	A 182 GR F11	FLANGE - WELDING NECK FLD	BORE FOR SCH. 120 PIPE	MAIN STEAM SUPERHEATED STEAM		NOS. 90, 91, 92 & 93	TUBE TURN PT. #34
	[illegible]	[illegible]	[illegible]	[illegible]													#34
	[illegible]	[illegible]	28	[illegible]													#34
	[illegible]	[illegible]	13	[illegible]													#34
	[illegible]	S-204	[illegible]	[illegible]									SCH. 80				#34
	[illegible]	[illegible]	[illegible]	[illegible]				1500*				FLANGE - SOCK. WELD FLD					#1558
	[illegible]	[illegible]	[illegible]	[illegible]													#1558
	[illegible]	[illegible]	[illegible]	[illegible]													#1558
[illegible]	[illegible]	[illegible]	6	6"	[illegible]	540	1050*	600*	B16.5	FORGED STEEL	A 105	FLANGE - WELDING NECK FLD	BORE FOR SCH. 80 PIPE	MAIN STEAM SATURATED STEAM		NOS. 90, 91, 92, & 93	TUBE TURN PT. #33
[illegible]	[illegible]	S-213	[illegible]	[illegible]				1500*				FLANGE - SOCK. WELD FLD		WTR. WALL DR. & STM DRUM VENT			#1558
[illegible]	2, 5	S-214	[illegible]	[illegible]				600*						SATURATED STEAM VENT			#152
[illegible]	[illegible]	S-215	6	[illegible]				1500*						BLR. DRUM TEST CONN.			#1558
[illegible]	[illegible]	S-216	[illegible]	[illegible]				[illegible]	[illegible]			ORIFICE WELD NECK PLUG END		SATURATED STEAM			#166
[illegible]	[illegible]	S-217	[illegible]	[illegible]					B16.5			FLANGE SOC WELD REDUCING FLD		ORIFICE CONN			152 MOD
[illegible]	5	S-218	2	¾"				600*					BORE FOR XXH PIPE	VENT			#152
	5	S-219	2	¾"								BLIND					#73

LIST OF GASKETS

REQUISITION NO.	ALT NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
[illegible]	[illegible]	[illegible]	[illegible]	10"	[illegible]	[illegible]	[illegible]	900*	—	STAINLESS STEEL	TYPE 304	GASKET - SPIRAL WOUND - STNS. STL. OUTER RING				FLEXITALLIC "CG"
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					—							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					—							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					—							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					—							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				1500*	—							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					—							
[illegible]	[illegible]	[illegible]	46	[illegible]					—							
[illegible]	[illegible]	[illegible]	14	[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]												
[illegible]	[illegible]	S-312	[illegible]	6"	[illegible]	[illegible]	[illegible]	900*		STAINLESS STEEL	TYPE 304	GASKET - SPIRAL WOUND - STNS. STL. OUTER RING				FLEXITALLIC "CG"
[illegible]	5	S-313	[illegible]	¾"				600*								

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.	ALT NO.	BOLTING IDENT NO.	AMT REQ'D	STUDS MATERIAL ASTM	STUDS DIA	STUDS LGTH	STUDS ANSI DIM STD	HEX NUTS MATERIAL ASTM	HEX NUTS DIA	HEX NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA	BOLTS LGTH	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	SERVICE	CODE NO.	REMARKS
[illegible]	[illegible]	S-400	[illegible]	[illegible]	1⅜	[illegible]	[illegible]	A 194 GR 3	1⅜	[illegible]	[illegible]	[illegible]								FOR 10" 900# FLANGE		
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]											8"		
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]											5"		
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]											4"		
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]											3"		
[illegible]	[illegible]	S-405	[illegible]		[illegible]	[illegible]			[illegible]											2" 1500#		
[illegible]	[illegible]	S-406	[illegible]		[illegible]	[illegible]			[illegible]											1"		
[illegible]	[illegible]	S-407	184		[illegible]	[illegible]			[illegible]											¾"		
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]											2½"		
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]											1½"		
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			1⅜													
[illegible]	[illegible]	S-412	[illegible]	[illegible]	1"	[illegible]	[illegible]	A 194 GR 1	1"	[illegible]	350	540								FOR 6" 600# FLANGE		
[illegible]	[illegible]	S-413	128		⅞	[illegible]			⅞											1" 1500#		
[illegible]	[illegible]	S-414	48		[illegible]	[illegible]			¾											¾"		
[illegible]	[illegible]	S-415	48		[illegible]	4"			¾"											½"		
[illegible]	[illegible]	S-416	24		1"	7"			1"											6"-600# ORIFICE		
[illegible]	5	S-417	16		⅝"	3¼"			⅝"											¾"-600# FLANGE		

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	6-15-77		1. LIST OF FLANGES QTY OF ITM S-202 CHG'D FROM 12 TO 28 2. LIST OF GASKETS QTY OF ITMS: S-302 CHG'D FROM 10 TO 22, S-307 " " 25 TO 31 3. LIST OF STUDS QTY OF ITMS: S-402 CHG'D FROM 80 TO 176, S-407 " " 40 TO 124	A.G.	[illegible] DATED 6-30-77
2	9-9-77		1. REVISED QTY OF ITEMS: S-200 FROM 2 TO 3, S-203 FROM 6 TO 13, S-204 FROM 5 TO 1, S-206 FROM 20 TO 19, S-207 FROM 20 TO 10, S-212 FROM 12 TO 8, S-213 FROM 10 TO 23, S-214 FROM 6 TO 9, S-302 FROM 22 TO 23, S-303 FROM 6 TO 12, S-304 FROM 5 TO 1, S-306 FROM 50 TO 52, S-307 FROM 31 TO 37, S-308 FROM 4 TO 12, S-402 FROM 176 TO 184, S-403 FROM 48 TO 96, S-404 FROM 40 TO 16, S-406 FROM 100 TO 128, S-407 FROM 124 TO 148, S-412 FROM 76 TO 72, S-415 FROM 16 TO 48	LPK	[illegible]
3	12-1-77		1 - ADDED S-216 PER Y.I.S. NO. 4650-22-50. 2 - ADDED S-309, S-310, S-408, S-409 & S-410.	PCG	12/[illegible]
4	1-31-78		1. ADDED ITEMS: S-217 AND S-416 2. REVISED QTY OF ITEMS: S-207 FROM 10 TO 13, S-215 FROM 4 TO 6, S-307 FROM 37 TO 46, S-308 FROM 12 TO 14, S-407 FROM 148 TO 184	LPK	[illegible]
5	8/29/78		1-ADDED FLANGES NOS. S-218 & S-219 TO LIST PER Y.I.S. NO. 4650-22-258, DECREASED PRESS. STD. OF FLANGES NO. S-214. 2-ADDED GASKETS NO. S-313 TO LIST PER Y.I.S. NO. 4650-22-258., IN GASKETS LIST ADDED (STNS. STL. OUTER RING) DESCRIPTION TYPE. 3-ADDED S-417 TO STUD LIST PER Y.I.S. NO. 4650-22-258, INCREASED LENGTH OF STUDS NO. S-405 PER Y.I.S. NO. 4650-22-185.	F.J.D.	9/7/78

HULL	DESIGN	CHARGE
8451	27,340 DWT CONTAINERSHIP	10-8450
8450	"	10-8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 4 NOV. 1976
DRAWN G. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-371-09-2
ALT. NO. 5

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR MAIN STEAM SYSTEM.

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-6-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

M-710

DATE OF ISSUE
ALTERATION
ENGINEERING DISTRIBUTION
MAIL: OWNERS, AMERICAN BUREAU, LLOYD'S R.S., U.S.M.A., U.S. NAVY, U.S.C.G., JOINER CONT'R.
INSPECTION: OWNER'S INSP., AM. BU. INSP., LLOYD'S INSP., U.S.M.A. INSP., U.S. NAVY INSP., U.S.C.G. INSP.
OFFICE: HULL DRAFT - 21, MACH. DRAFT - 22, ELEC DRAFT - 23, OUTFIT DRAFT - 25, ESTIMATING, J. DOUGHERTY (LTD)
MISC.: PRODUCTION (BCD), ORDER DEPT., JOINER CONT. YARD
TOTAL ENG'R. DIST.
YARD DISTRIBUTION
YARD: J. SIMMONS, PIECE RATE - 11, TEST DEPARTMENT, PROD. PLANNING
STRUCTURAL: GROUND ASSEMBLY, NO. WAY, NO. WAY, NO. WAY, NO. WAY, STRUCT SUPER., OPTICAL DETAIL - 45, WET DOCK
MACH'Y & OUTFIT: PIPE SHOP - 52, OUTFIT #1 PIER, PIPE DRAFT - 52, BOILER SHOP - 58, OUTSIDE MACH. - 60, ELECTRIC SHOP - 70, SHEET MET. SHOP - 74, COPPER SHOP - 51, PAINT SHOP - 76, WELDING
OTHER: MOLD LOFT - 41, BRACKET SHOP
TOTAL YARD DIST.

4650-51-ALT 1
4650-51-ALT 2
4650-51-ALT 3
4650-51-ALT 4
4650-51-ALT 5

90 PT.

M-0284-E3408-05

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-2

FRAME 2 OF 2

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
3																								
2	2	4	4																					
	4	9	10		5																			
		3	3			2	2																	
					1																			
		1	1																					
		8	8				3																	
		6	6		1																			
						4	4																	
		9	8			3	3																	
					1	4	4																	
						2	4																	
						1	1																	
						1	1																	

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE		S
502101	502101-C		2	S-200	3	10"	871	955	1590#	900#	B16.5	FGD. CHROME MOLY	A 182 GR F11	FLANGE - WELDING NECK F.F.D.	BORE FOR SCH 120 PIPE	MAIN STEAM SUPERHEAT
				S-201	12	8"										
	502101-B		1	S-202	28	5"										
	502101-C		2	S-203	13	4"										
			2	S-204	1	3"										
				S-205	2	2"				1500#				FLANGE - SOCK WELD F.F.D.	SCH 80	
			2	S-206	19	1"										
	502101-F		2,4	S-207	13	¾"										
502101			2	S-212	8	6"	950	540	1650#	600#	B16.5	FORGED STEEL	A 105	FLANGE - WELDING NECK F.F.D.	BORE FOR SCH 80 PIPE	MAIN STEAM SATURATED
	502101-C		2	S-213	23	1"				1500#				FLANGE - SOCK WELD F.F.D.		WTR WALL D
			2,5	S-214	9	¾"				600#						SATURATED
	502101-F		4	S-215	6	½"				1500#						BLK DRUM
502101-D			2	S-216	2	6"				600#	B16.36			ORIFICE WELD NECK PLUG END		SATURAT
502101-F			4	S-217	2	[illegible]					B16.5			FLANGE SOC WELD REDUCING F.F.D.		
502101-G			5	S-218	2	¾"				600#					BORE FOR XXH PIPE	
			5	S-219	2	¾"								BLIND		

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT 13	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
2																								
2	3	3	3																					
	2	9	8		4																			
		4	4			2	2																	
					1																			
		1	1																					
		24	14				4																	
2	2	15	15		6	1	1																	
						6	8																	
												2												
												2												
						3	3																	
						4	4																	

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	S
502124				S-300	2	10"	871	955	1590#	900#	—	STAINLESS STEEL	TYPE 347	GASKET - SPIRAL WOUND - STNS. STL. OUTER RING	
				S-301	11	8"					—				
	502124-B		1,2	S-302	23	5"					—				
	502124-C		2	S-303	12	4"					—				
			2	S-304	1	3"					—				
				S-305	2	2"				1500#	—				
			2	S-306	52	1"					—				
	502124-G	[illegible]	1,2,4	S-307	46	¾"					—				
	502124-C	[illegible]	2,4	S-308	14	½"									
502124-E			3	S-309	2	2½"					—				
			3	S-310	2	1½"					—				
SUPPLY			2	S-312	6	6"	950	540	1650#	600#	—	STAINLESS STEEL	TYPE 304	GASKET - SPIRAL WOUND - STNS. STL. OUTER RING	
502124-G			5	S-313	4	¾"				600#					

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT 13	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
32																								
24	36	36	36																					
	16	72	64		32																			
		32	32			16	16																	
		4	4		8																			
		8	8																					
		48	48			16	16																	
8	8	60	60		24	12	12																	
												16												
												8												
						12	12																	
						36	36																	
						24	24																	
						12	12																	
						16	16																	

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.		NUTS	ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	ASH. HEX NUTS SEMI-FINISHED (2) PER STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA	BOLTS LGTH.	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD.
502129		502130-A		S-400	32	A 193 GR B16	1⅜"	9"	B1.1 8UN-2A	A 194 GR 3	1⅜"	B18.2.2 B1.1 8UN-2B	871	955							
				S-401	132		1⅜"	8½"			1⅜"										
	502129 A & C	[illegible]	1,2	S-402	184		1¼"	7½"			1¼"										
		502129-B 502129-D		S-403	96		1⅛"	6½"			1⅛"										
		502130-A		S-404	16		⅞"	5½"	B1.1 UNC-2A		⅞"	B18.2.2 B1.1 UNC-2B									
		502129-G	5	S-405	16		⅝"	6"			⅝"										
		502130-A	2	S-406	128		⅝"	4½"			⅝"										
	502129-A & C	[illegible]	1,2,4	S-407	184		¾"	4½"			¾"										
502129-E	502130-B		3	S-408	16		1"	6"			1"										
			3	S-409	8		1"	6¼"			1"										
			3	S-410	24		1⅛"	8½"			1⅛"										
502129			2	S-412	72	A 193 GR B7	1"	6½"	B1.1 UNC-2A	A 194 GR 1	1"	B18.2.2 B1.1 UNC-2B	750	540							
				S-413	100		⅞"	4¾"			⅞"										
				S-414	40		¾"	4¼"			¾"										
			2	S-415	48		¾"	4"			¾"										
502129-F			4	S-416	24		1"	7"			1"										
502129-H			5	S-417	16		⅝"	3¼"			⅝"										

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-3

FRAME 1 OF 2

LIST OF FITTINGS

FITTING IDENT. NO.	AMT REQ'D	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG OR FIG. NO. OR EQUAL
S-500	[illegible]	10"	871	955	120	.718	B16.9	STL SMLS CHR MOLY	A234 GR WP11	BUTT WELD 90° L.R. ELBOW	MAIN STEAM - SUPERHEATED STEAM	NOS. 90, 91, 92, 93	TUBE TURN PT #1201
S-501	33	5"				.500							#1201
S-502	16	4"				.438							#1201
S-503	30	1"			3000#	—	B16.11	FORGED CHR MOLY	A182 GR F11	SOCK WELD 90° ELBOW			BONNEY FORGE
S-504	1	10"			120	.843	B16.9	STL SMLS CHR MOLY	A234 GR WP11	BUTT WELD TEE			TUBE TURN PT #1220
S-505	2	5"				.500							#1220
S-506	[illegible]	8x8x5"				.718x.500				REDUCING TEE			#1222
S-507	4	8x8x4"				.718x.438							#1222
S-508	4	1"			3000#	—	B16.11	FORGED CHR MOLY	A182 GR F11	SOCK WELD TEE			BONNEY FORGE
S-509	[illegible]	10"x8"			120x120	.843x.718	B16.9	STL SMLS CHR MOLY	A234 GR WP11	BUTT WELD CONC. REDUCER			TUBETURN PT #1290
S-510	8	5"x4"			120x120	.500x.438							1230
S-511	[illegible]	5"x3"			120x80	.500x.300							1290 MOD
S-512	[illegible]	4"x3"			120x80	.438x.218							1290 MOD
S-513	4	4"	950	940	80	.432	B16.9	SMLS STEEL	A234 GR WPB	BUTT WELD 90° L.R. ELBOW	SATURATED STEAM		#2
S-514	[illegible]	[illegible]	871	955	—	—	—	FORGED CHR MOLY	A182 GR F11	SOCK WELD BOSS - FOR EX. HVY. PIPE	SUPERHEATED STEAM		BETH STD EF-488 FIG #8
[illegible]	[illegible]	[illegible]			—	—	—						
[illegible]	[illegible]	[illegible]			—	—	—						
[illegible]	[illegible]	[illegible]			—	—	—			SCRD BOSS			
[illegible]	[illegible]	[illegible]			—	—	—					NOS. 90, 91, 92, 93	BETH STD EF-488 FIG #9
[illegible]	[illegible]	[illegible]			—	—	B16.11	STAIN STEEL	GR 316	SCRD REDUCING BUSHING	THERMO. CONN	NOS. 90, 91, 92, 93	
S-520	[illegible]	[illegible]			3000#	—	—	FORGED STEEL	A105	S.W. REDUCING INSERT	DRUM VENT		BONNEY FORGE
S-521	[illegible]	[illegible]			3000#	—	B16.11			SOCK WELD 90° ELBOW		NOS. 90, 91, 92, 93, 114	
[illegible]	[illegible]	[illegible]				—				TEE		NOS. 90, 91, 92, 93	
S-523	6	[illegible]	950	940	—	—	—			BOSS - FOR EX. HVY. PIPE	SATURATED STEAM VENT		
[illegible]	[illegible]	10"	871	955	—	—	—	FORGED CHR. MOLY	A335 GR P11	TYPE "A" CHILL RING FOR SCH 120 PIPE	SUPERHEATED STEAM		BETH STD EF-358 FIG #8
[illegible]	[illegible]	[illegible]			—	—	—			"A"			EF-488 FIG #13
[illegible]	[illegible]	[illegible]			—	—	—			"B"			
[illegible]	[illegible]	[illegible]			—	—	—			"A"			
[illegible]	[illegible]	[illegible]			—	—	—			"B"			
[illegible]	[illegible]	[illegible]			—	—	—			"A"			
[illegible]	[illegible]	[illegible]			—	—	—			"B"			
[illegible]	[illegible]	[illegible]			—	—	—			"A" SCH 80 PIPE			
[illegible]	[illegible]	[illegible]			—	—	—			"A"			
[illegible]	[illegible]	[illegible]			—	—	—	STEEL	1020	"A"	SATURATED STEAM		
[illegible]	[illegible]	[illegible]			—	—	B16.11	FORGED CHR. MOLY	A182 GR F11	SCH 160 PIPE PLUG - SCRD.	THERMO. TEST CONN		EF 358 FIG #13
[illegible]	[illegible]	[illegible]			—	—				SCRD BOSS - FOR EX HVY PIPE	PRESS. GAGE CONN	NOS. 90, 91, 92, 93	BONNEY FORGE
[illegible]	[illegible]	[illegible]			—	—	B16.11			45° ELBOW S.W.	SUPERHEATED STEAM		BETH. STD. EF-488 FIG #9
[illegible]	[illegible]	[illegible]			—	—		FORGED STEEL	A-105	90° ELBOW S.W.	WATER WALL DRAINS & DRUM VENTS	NOS. 90-93	BONNEY FORGE
[illegible]	[illegible]	[illegible]			—	—				TEE S.W.			
[illegible]	[illegible]	[illegible]			—	—	B16.9	STL SMLS CHR MOLY	A234 GR WP11	45° ELBOW L.R. BUTT WELD	SUPERHEATED STEAM		
[illegible]	[illegible]	[illegible]			—	—	—	FORGED CHR MOLY	A335 GR P11	TYPE "B" CHILL RING FOR SCH 120 PIPE			TUBE TURN #1205
[illegible]	[illegible]	[illegible]			—	—	—			FLOW NOZZLE .75 DIA. HOLE			BETH STD EF-488 FIG #13
[illegible]	[illegible]	[illegible]			—	—	B16.11	FORGED CHR MOLY	A182 GR F11	LATERAL S.W.	SATURATED STEAM		FURNISHED BY CENTRAL CONTR.
[illegible]	[illegible]	[illegible]			—	—				S.W. RED INSERT	SUPERHEATED STEAM	NOS. 90-93	BONNEY FORGE
[illegible]	[illegible]	[illegible]			—	—	—	STEEL	1020	TYPE "B" CHILL RING FOR SCH 80 PIPE			
[illegible]	[illegible]	[illegible]			—	—	—		A36	TEMP SPACER PL 1/16" THK (FOR COLD PULL)	SATURATED STEAM SEE DET "9-A" ON M-4650-111-20		BETH STD EF-358 FIG #13
[illegible]	[illegible]	[illegible]								1 5/16"	SEE DET "9-A" ON M-4660-111-15		MAKE FOR HULL 4650 ONLY RE USE FOR HULL 4651

NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	6/15/77		LIST OF FITTINGS CHGD QTY OF THE FOLLOWING ITEMS: ITM NR. S500 FROM 8 TO 10 501 15 33 503 10 30 505 1 2 508 2 4 515 5 6 517 8 11 519 3 6 526 14 18 527 15 28 528 40 74 530 10 14 531 4 5 535 1 4 ADDED ITMS S536 TO S539	AG	
2	9/11/77		1. ADDED FITTINGS S-540 THRU S-544 2. REVISED QTY OF ITEMS S-502 FROM 6 TO 16, S-510 FROM 4 TO 8, S-513 FROM 2 TO 4, S-515 FROM 6 TO 8, S-517 FROM 11 TO 12, S-526 FROM 18 TO 19, S-529 FROM 15 TO 16, S-530 FROM 14 TO 30, S-533 FROM 12 TO 8	L.P.K.	
3	12-1-77		1- INCR. QTY OF S-518 (8-13), S-523 (4-5) & S-527 (28-35) 2- DELETED S-536 3- CHANGED MAT'L OF S-519 (WAS FORGED CHR. MOLY - A182 GR F11)		
4	1-3-78		1. REVISED QTY. OF ITEMS S-515 FROM 13 TO 16, S-520 FROM 4 TO 6, S-521 FROM 2 TO 4, S-538 FROM 4 TO 10. 2. ADDED ITEMS S-545 AND S-546	L.P.K.	
5	6/23/78		1- INCREASED FITTING NR S-523 FROM 5 TO 6 REQ'D., PER Y.I.S. NR 4650-22-258.	F.J.O.	7/7/78

HULL	DESIGN	CHARGE
4651	27,340 DWT CONTAINERSHIP	10-8450
4650		10-8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE NOV. 3, 1976
DRAWN G. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-371-09-3
ALT. NO. 5

FITTING LIST
FOR
MAIN STEAM PIPING

UAO-50247

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-6-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

ALTERATION
DATE OF ISSUE
ENGINEERING DISTRIBUTION
OWNERS
AMERICAN BUREAU
LLOYD'S R.S.
U.S.M.A.
U.S. NAVY
U.S.C.G.
JOINER CONT'R
OWNER'S INSP.
AM. BU. INSP.
LLOYD'S INSP.
U.S.M.A. INSP.
U.S. NAVY INSP.
U.S.C.G. INSP.
HULL DRAFT. - 21
MACH. DRAFT. - 22
ELEC. DRAFT. - 23
OUTFIT DRAFT. - 25
ESTIMATING
J.DOUGHERTY (ETD)
PRODUCTION (BCO)
ORDER DEPT.
JOINER CONT YARD
TOTAL ENG'R. DIST.
YARD DISTRIBUTION
PIECE RATE - 11
TEST DEPARTMENT
GROUND ASSEMBLY
NO. WAY
NO. WAY
NO. WAY
NO. WAY
STRUCT. SUPER.
OPTICAL DETAIL
WET DOCK
PIPE SHOP - 52
OUTFIT #1 PIER
PIPE DRAFT - 52
BOILER SHOP - 58
OUTSIDE MACH. - 60
ELECTRIC SHOP - 70
SHEET MET SHOP - 74
COPPER SHOP - 51
PAINT SHOP - 75
WELDING
MOLD LOFT - 41
BRACKET SHOP
TOTAL YARD DIST.
4650-51 ALT 1
4650-51 ALT 3
4650-51 ALT 4
4650-51 ALT 5
SQ. FT.

M-711

M-4650-371-09-03

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-3

FRAME 2 OF 2

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FITTINGS

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	
1	1	4	4					502102	502102-A			1	5-500	10	8"	871	955	120	.718	B16.9	STL. SMLS. CHR. MOLY	A 234 GR. WP11	BUTT WELD 90° L.R. ELBOW	MAIN STEAM - SUPERHEAT
	2	11	14		6			↓	↓			1	5-501	33	5"				.500					
		4	4			4	4	↓	502102-B			2	5-502	16	4"			↓	.438	↓	↓	↓	↓	
		15	15					502103	502103-A			1	5-503	30	1"			3000#	—	B16.11	FORGED CHR. MOLY	A 182 GR. F11	SOCK. WELD 90° ELBOW	
1								502102					5-504	1	10"			120	.843	B16.9	STL. SMLS. CHR. MOLY	A 234 GR. WP11	BUTT WELD TEE	
		1	1						502102-A			1	5-505	2	5"				.500					
		1	1										5-506	2	8"×8"×5"				.718×.500				REDUCING TEE	
		2	2					↓					5-507	4	8"×8"×4"			↓	.718×.438	↓	↓	↓	↓	
		2	2					502103	502103-A			1	5-508	4	1"			3000#	—	B16.11	FORGED CHR. MOLY	A 182 GR. F11	SOCK WELD TEE	
2								502102	502102-B				5-509	2	10"×8"			120×120	.843×.718	B16.9	STL. SMLS. CHR. MOLY	A 234 GR. WP11	BUTT WELD CONC. REDUCER	
		4	4									2	5-510	8	5"×4"			120×120	.500×.438					
		2	2		1								5-511	3	5"×3"			120×80	.500×.300					
		1	1					↓					5-512	2	4"×2"	↓	↓	120×80	.438×.218	↓	↓	↓	↓	↓
						2	2	SUPPLY				2	5-513	4	6"	950	540	80	.432	B16.9	SMLS. STEEL	A 234 GR. WPB	BUTT WELD 90° L.R. ELBOW	SATURATED
		1	1					502112					5-514	2	1"	871	955	—	—	—	FORGED CHR. MOLY	A 182 GR. F11	SOCK. WELD BOSS - FOR EX. HVY. PIPE	SUPERHEAT
1		7	7		1				502112-E	502112-B&E		1,2,3,4	5-515	16	¾"			—	—	—				
					1								5-516	4	½"			—	—	—			↓	
1		5	5		1				502112-A	502112-B		1,2	5-517	12	1"			—	—	—			SCRD BOSS	
1								↓					5-518	2	½"			—	—	—	↓	↓	↓	↓
		3	3					502103-D				1,3	5-519	6	1"×¾"			—	—	B16.11	STAIN STEEL	GR. 316	SCRD REDUCING BUSHING	THERMO. C
						3	3	502103	502103-E			4	5-520	6	1"×½"			3000#		—	FORGED STEEL	A 105	S.W. REDUCING INSERT	DRUM VEN
		2	2						502103-E			4	5-521	4	½"			3000#	—	B16.11			SOCK WELD 90° ELBOW	
								↓					5-522	2	½"	↓	↓	↓	—	↓			TEE	↓
		3	3					UAO				3,5	5-523	6	¾"	950	540	—	—	—	↓	↓	BOSS - FOR EX. HVY. PIPE	SATURATE
5								502111					5-524	5	10"	871	955	—	—	—	FORGED CHR. MOLY	A 335 GR. P11	TYPE "A" CHILL RING FOR SCH 120 PIPE	SUPERHEAT
3	2	5	5										5-525	18	8"			—	—	—			"A"	
1	2	8	8						502111-A	502111-B		1,2	5-526	19	8"			—	—	—			"B"	
	4	12	13		6				↓			1,3	5-527	35	5"			—	—	—			"A"	
	3	22	26		15				↓			1	5-528	74	5"			—	—	—			"B"	
		5	5			3	3		502111-B			2	5-529	16	4"			—	—	—			"A"	
		8	8			7	7		502111-A	502111-B		1,2	5-530	30	4"			—	—	—			"B"	
		2	2		1				↓			1	5-531	5	3"			—	—	—			"A" SCH 80 PIPE	
		1	1										5-532	2	2"	↓	↓	—	—	—	↓	↓	"A"	
						4	4	↓				2	5-533	8	6"	950	540	—	—	—	STEEL	1020	"A"	SATURATED
		2	2					502103					5-534	5	1"	871	955	3000#	—	B16.11	FORGED CHR. MOLY	A 182 GR. F11	SQ. HD. PIPE PLUG - SCRD.	THERMO. TE
								502112	502112-A			1,3	5-535	4	½"				—				SCRD. BOSS - FOR EX. HVY. PIPE	PRESS. GA
		2	2					502103-A				1	5-536	4	1"	↓	↓	↓	—	B16.11	↓	↓	45° ELBOW S.W.	SUPER H
		4	6									1	5-537	10	1"	950	540	3000#	—		FORGED STEEL	A-105	90° ELBOW S.W.	WATER W
		2	2			3	3	↓	502103-E			1,4	5-538	10	1"	↓	↓	↓		↓	↓	↓	TEE S.W.	↓
	1				2			502102-A				1	5-539	3	5"	871	955	120	.500	B16.9	STL. SMLS. CHR. MOLY	A 234 GR. WPB	45° ELBOW L.R. BUTT WELD	SUPER H
1								502111-A				2	5-540	1	10"	↓	↓	—	—	—	FORGED CHR. MOLY	A-335 GR. P11	TYPE "B" CHILL RING FOR SCH 120 PIPE	
							1	—				2	5-541	2	6"	950	540	—	—	—	—	—	FLOW NOZZLE .75 DIA. HOLE	SATURATED
							1	502103-B				2	5-542	2	1"			3000#	—	B16.11	FORGED CHR. MOLY	A 182 GR. F11	LATERAL S.W.	SUPERHEA
							1	↓				2	5-543	2	1"×½"	↓	↓	↓		↓	↓	↓	S.W. RED. INSERT	↓
						3	3	502111-B				2	5-544	6	6"	950	540				STEEL	1020	TYPE "B" CHILL RING FOR SCH 80 PIPE	SATURATE
	1							* UAO				4	5-545	1	—	—	—					A 36	TEMP. SPACER PC. 9/16" THK. (FOR COLD PULL)	SEE DET
1								* UAO				4	5-546	1	—						↓	↓	1 3/16"	SEE DET

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

EF-529

PLAN NO.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-9

FRAME 1 OF 2

LIST OF PIPES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
2249			AS-1	200'-0"	—	200'-0"	4"	80	0.337	866	555	B36.10	SEAMLESS STEEL	A-106 GR.B		I	1590#	NOTE NOS. 128,135&136
			AS-2	180'-0"	—	180'-0"	3"		0.300									128,135&136
			AS-3	180'-0"	—	180'-0"	2½"		0.276									128,135&136
		3,4	AS-4	310'-0"	—	310'-0"	2"		0.218									128,135&136
			AS-5	200'-0"	—	200'-0"	1"		0.147									128,135&136
2249-B		1	AS-6	10'-0"	—	10'-0"	10"		0.594									128,135&136
		3,4	AS-7	182'-0"	—	182'-0"	1½"		0.200									128,135&136
		1	~~AS-10~~	~~100'-0"~~	—	~~100'-0"~~	~~10"~~	~~40~~	~~0.365~~	~~150~~	~~411~~	~~B36.10~~	~~STEEL~~	~~A53 TYPE GR.B~~		~~II~~	~~248~~	~~NOTE NOS. 128,135~~
2249		1	AS-11	140'-0"	—	140'-0"	2½"	40	0.203	150	411	B36.10	STEEL	A106 GR.B		I	248	NOTE NOS. 128,135&136
		1	AS-12	220'-0"	—	220'-0"	2"		0.154				SEAMLESS STEEL	A106 GR.B				128,135&136
		4,5	AS-13	300'-0"	—	300'-0"	1½"		0.145									128,135&136
		1,3	~~AS-14~~	~~100'-0"~~	—	~~100'-0"~~	~~1¼"~~		~~0.140~~									~~128,135&136~~
		1,3	AS-15	200'-0"	—	200'-0"	1"		0.133									128,135&136
		1,5	AS-16	100'-0"	—	100'-0"	¾"		0.113									128,135&136
		1	AS-17	200'-0"	—	200'-0"	½"		0.109									128,135&136
		2,4	AS-18	40'-0"	—	40'-0"	4"	40	0.237	125						II		128,135&136

LIST OF VALVES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS. STD.	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO.
2200			AS-100	1	10"	866	555	600#	B16.10	CAST CHROME-MOLY	A217 GR.WC6	STAIN. STL.	STAIN. STL.	STAIN. STL.	—	FLGD. F&D.	B16.5	GLOBE	NOS. 2,3,4,6,8,9,25,95,90-93	EDWARD FIG.#616
			AS-101	2	4"			600#		CAST CHROME-MOLY	A217 GR.WC6				—			GLOBE	2,4,6,8,95,90-93	EDWARD FIG.#618
			AS-102	2	4"										—			GLOBE STOP CHECK-NON CHATTERING TYPE	2,4,6,7,8,95,90-93	FIG.#604
			AS-103	7	3"										—			GLOBE	2,4,6,95,90-93	FIG.#618
			AS-104	5	2½"										—				2,4,6,95,90-93	FIG.#618
			AS-105	6	2"					FGD. CHROME-MOLY	A182 GR.F-11				—				4,5,90-93	FIG.#828
			AS-106	3	1"										—				4,5,90-93	FIG.#828
			AS-107	3	¾"										—				4,5,90-93	FIG.#828
			AS-108	14	½"										—				4,5,90-93	FIG.#828
			AS-109	6	2½"	150	411	150#		CAST STEEL	A216 GR.WCB				—			GLOBE	4,6,90-93	LUNKENH. FIG.#1542
		4	AS-110	5	2"										—				4,6,90-93	FIG.#1542
			AS-111	10	1½"				—	FORGED STEEL	A105-GR.II				—				4,6,90-93	FIG. 1110-MOD
		1	AS-112	2	1¼"				—						—				4,6,90-93	FIG. 1110-MOD
2200		3,4	AS-113	15	1"				—						—				4,6,90-93	FIG. 1110-MOD
		6	AS-114	7	¾"				—						—				4,6,90-93	FIG. 1110-MOD
			AS-115	6	½"				—						—				4,6,90-93	FIG. 1110-MOD
		1,3	~~AS-116~~	~~8~~	~~1½"~~				~~B16.10~~	~~CAST STEEL~~	~~A216 GR.WCB~~			—	~~MONEL~~			~~HORIZONTAL SWING CHECK~~	~~10,90-93~~	~~LUNKENH. FIG.1572~~
			AS-117	3	1"					FORGED STEEL	A105-GR.II			STAIN. STL.	—			GLOBE STOP-CHECK	4,6,90-93	LUNKENH. FIG.1170-X-MOD
001			AS-118	4	1½"	866	555	600#				—	—	—	—			DIAPHRAGM OPERATED POPPET VALVE	VENDOR FURNISHED	DIAMOND POWER BABCOCK & WILCOX
2200			AS-119	1	¾"	150	411	150#	B16.10	FORGED STEEL	A105-GR.II	STAIN. STL.	STAIN. STL.	STAIN. STL.	—			GATE VALVE	NOS. 4,6,90-93	LUNKENH. FIG.1100W
		6	AS-120	1	2½"	866	555	600#		—	—	—	—	—	—			CONTROL VALVE	NOTE NO. 96	LESLIE
		6	AS-121	2	2"					—	—	—	—	—	—				VENDOR FURNISHED	
		6	AS-122	1	2"					—	—	—	—	—	—				NOTE NO. 96	
		6	AS-123	1	2"					—	—	—	—	—	—				NOTE NO. 96	
		6	AS-124	1	1"	150	411	150#		—	—	—	—	—	—				NOTE NO. 96	
		6	AS-125	1	¾"					—	—	—	—	—	—				VENDOR FURNISHED	
		6	~~AS-126~~	~~1~~	~~½"~~					—	—	—	—	—	—					
		6	AS-127	2	¾"					—	—	—	—	—	—			GATE VALVE		—
		3,4	AS-128	2	1½"					—	—	—	—	—	—			SOLENOID VALVE		—
001		3	AS-129	6	¾"	600	900	600#								SOCKET WELD		HORIZONTAL SWING CHECK	VENDOR FURNISHED	ROCKWELL FIG.#838-Y
001		3,4	AS-130	12	¾"			600#		FORG. CHROME-MOLY						SOCKET WELD		GLOBE	VENDOR FURNISHED	R.P.C. STYLE F-81

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	12-10-76		1. ADDED AS-6 2. DELETED AS-10 3. REVISED U.S.C.G. CLASS FROM CLASS II TO CLASS I FOR AS-11 THRU AS-17 4. REVISED SIZE OF AS-112 FROM 1½" TO 1¼" (BD-DRI) 5. DELETED NOTE NO. 4 FROM AS-116	G.L.W.	G.G.S. LTR. DATED 5-11-77
2	8-8-77		1 - ADDED AS-18	PCG	
3	10/29/77		1 - AS-7 ADDED TO LIST. 2 - AS-14 DELETED FROM LIST. 3 - INCREASED PIPE AS-4 FROM 180'-0" TO 280'-0" PER SHIP. 4 - INCREASED PIPE AS-15 FROM 100'-0" TO 200'-0" PER SHIP. 5 - INCREASED VALVE NO. AS-113 FROM 6 TO 10 REQ'D. 6 - DELETED VALVE NO. AS-116 FROM LIST. 7 - ADDED VALVE NOS. AS-129 & AS-130 TO LIST. 8 - INCREASED VALVE NO. AS-128 FROM 1 TO 2 REQD. PER SHIP.	F.J.D.	
4	2-2-78		1. REVISED THE QTY FOR: AS-4 (280' TO 310'), AS-7 (160' TO 182'), AS-13 (220' TO 260'), AS-110 (4-5), AS-113 (10-15). 2. REVISED AS-130. CHG'D THE QTY (6-12), SIZE (½" TO ¾"), & MAN. DWG. (ROCKWELL D-473813 TO R.P.C. STYLE F-81). 3. REVISED AS-18. CHG'D DESIGN CRITERIA (150 TO 125) & USCG CLASS (I TO II).	RAM	
5	8-3-78		1. INCREASE AS-13 FROM 260' TO 300' & AS-16 FROM 80' TO 100'.	GGK	
6	10-4-78		1. ADDED REQ. NO. TO ITEMS: AS-120 THRU AS-125, AS-127 AND AS-128. 2. DELETED ITEM AS-126 3. AS-114 QTY. INCR. FROM 4 TO 5	LPK	11/22/78

HULL	DESIGN	CHARGE
4651	27,340 DWT CONTAINERSHIP	8450
4650		8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 2 SEPT. 1976
DRAWN G.L.W.
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-371-09-9
ALT. NO. 6

PIPE & VALVE LIST FOR AUXILIARY STEAM SYSTEM

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	10-12-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

M-712

		DATE OF ISSUE
	ALTERATION	[illegible]
	ENGINEERING DISTRIBUTION	[illegible]
MAIL	OWNERS	[illegible]
MAIL	AMERICAN BUREAU	[illegible]
MAIL	LLOYD'S R.S.	
MAIL	U.S.M.A.	
MAIL	U.S. NAVY	
MAIL	U.S.C.G.	[illegible]
MAIL	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	[illegible]
INSPECTION	AM. BU. INSP.	
INSPECTION	LLOYD'S INSP.	
INSPECTION	U.S.M.A. INSP.	[illegible]
INSPECTION	U.S. NAVY INSP.	
INSPECTION	U.S.C.G. INSP.	
OFFICE	HULL DRAFT. - 21	[illegible]
OFFICE	MACH. DRAFT. - 22	[illegible]
OFFICE	ELEC. DRAFT. - 23	[illegible]
OFFICE	OUTFIT DRAFT. - 25	
OFFICE	ESTIMATING	
MISC.	L. DOUGHERTY (CTO)	[illegible]
MISC.	PRODUCTION (BOP)	
MISC.	ORDER DEPT.	
MISC.	JOINER CONT'R YARD	
	TOTAL ENG'R. DIST.	[illegible]
	YARD DISTRIBUTION	[illegible]
YARD	[illegible]	[illegible]
YARD	J. SIMMONS	[illegible]
YARD	PIECE RATE - 11	[illegible]
YARD	TEST DEPARTMENT	
YARD	[illegible]	[illegible]
YARD	PLANNING	[illegible]
STRUCTURAL	GROUND ASSEMBLY	[illegible]
STRUCTURAL	35 DEPT.	[illegible]
STRUCTURAL	[illegible]	[illegible]
STRUCTURAL	H. LEVY	[illegible]
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	STRUCT. SUPER.	[illegible]
STRUCTURAL	OPTICAL DETAIL - 45	[illegible]
STRUCTURAL	WET DOCK	
MACH'Y & OUTFIT	PIPE SHOP - 52	[illegible]
MACH'Y & OUTFIT	OUTFIT. #1 PIER	[illegible]
MACH'Y & OUTFIT	PIPE DRAFT - 52	[illegible]
MACH'Y & OUTFIT	BOILER SHOP - 58	[illegible]
MACH'Y & OUTFIT	OUTSIDE MACH. - 60	[illegible]
MACH'Y & OUTFIT	Q-MAT'L	[illegible]
MACH'Y & OUTFIT	ELECTRIC SHOP - 70	
MACH'Y & OUTFIT	SHEET MET. SHOP - 74	
MACH'Y & OUTFIT	COPPER SHOP - 51	
MACH'Y & OUTFIT	PAINT SHOP - 75	[illegible]
OTHER	WELDING	
OTHER	MOLD LOFT - 41	[illegible]
OTHER	BRACKET SHOP	
	TOTAL YARD DIST.	[illegible]

SQ. FT.

M-4650-371-09-9

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-9

FRAME 2 OF 2

LIST OF PIPES

PIPING PACKAGE UNIT APPLICATION: UNIT #1 – UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION											REQUISITION NO			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D.			SIZE	SCH NO.	WALL THK	DESIGN CRITERIA		ANSI DIM STD	DESCRIPTION	ASTM SPEC.
UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #13	UNIT #14	UNIT #15							BLK.	GALV.	TOTAL				P.S.I.	°F			
	18'		12'			2-6'	35'				502244					AS-1	200'-0"	—	200'-0"	4"	80	0.337	866	555	B36.10	SEAMLESS STEEL	A106 GR.B
						46'	27'									AS-2	180'-0"	—	180'-0"	3"		0.300					
						58'	6'									AS-3	180'-0"	—	180'-0"	2½"		0.276					
		20'		53'0		135'	102'					502244-H	502244-J		3,4	AS-4	310'-0"	—	310'-0"	2"		0.218					
		15'		20'		20'	20'									AS-5	200'-0"	—	200'-0"	1"		0.147					
						5'					502244-B				1	AS-6	10'-0"	—	10'-0"	10"		0.594					
							2-0'	180'			502244-K	502244-J			3,4	AS-7	182'-0"	—	182'-0"	1½"		0.200					
															1	AS-10	10'-0"	—	10'-0"	10"	40	0.365	150	411	B36.10	STEEL	A106 GR.B
	16'						20'	100'			502244				1	AS-11	140'-0"	—	140'-0"	2½"	40	0.203	150	411	B36.10	STEEL	A106 GR.B
45'					35'	65'	42'	30'							1	AS-12	220'-0"	—	220'-0"	2"		0.154				SEAMLESS STEEL	A106 GR.B
	60'	40'			40'	30'	40'	65'		15'-0		502244-J	502244-K		1,4,5	AS-13	300'-0"	—	300'-0"	1½"		0.145					
					~~2~~										1,3	~~AS-14~~	~~100'-0"~~	—	~~100'-0"~~	~~1¼"~~		~~0.140~~					
10'	12'	50'				30'	80'		7'			502244-H			1,3	AS-15	200'-0"	—	200'-0"	1"		0.133					
					3'	40'	40'					502244-K			1,5	AS-16	100'-0"	—	100'-0"	¾"		0.113					
	16'					55'	45'								1	AS-17	200'-0"	—	200'-0"	½"		0.109					
40'											502244-G				2,4	AS-18	40'-0"	—	40'-0"	4"	40	0.237	125				

LIST OF VALVES

PIPING PACKAGE UNIT APPLICATION: UNIT #1 – UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION										REQUISITION NO			CODE NO. (FUTURE USE)	ALT NO	VALVE IDENT	AMT REQ'D	SIZE	DESIGN CRITERIA		PRESS STD	ANSI DIM STD	BODY MATERIAL	ASTM SPEC.	TRIM				END TYPE	ANSI DIM STD	
UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #13	UNIT #14									P.S.I.	°F					SEAT	DISC	STEM	PIN WHERE REQ'D			
						1				502200					AS-100R	1	10"	866	555	600#	B16.10	CAST CHROME-MOLY	A 217 GR.WC6	STAIN. STL.	STAIN. STL.	STAIN. STL.	—	FLGD. F&D.	B16.5	GLOB
1							1								AS-101	2	4"			600#		CAST CHROME-MOLY	A 217 GR.WC6				—			GLOBE
						1	1								AS-102	2	4"										—			GLOB
						7									AS-103	7	3"										—			GLOB
						4	1								AS-104	5	2½"										—			
1				1		2	2								AS-105	6	2"					FGD. CHROME-MOLY	A182 GR.F11				—			
1						1	1								AS-106	3	1"										—			
1						3	1								AS-107	5	¾"										—			
						2	2								AS-108	14	½"										—			
	3						1	2							AS-109	6	2½"	150	411	150#		CAST STEEL	A216 GR.WCB				—			GLOB
						2	2	1			502200-C			4	AS-110	5	2"										—			
	3					3	4								AS-111	10	1½"				—	FORGED STEEL	A105-GR.II				—			
					2					502200-A				1	AS-112	2	1¼"				—						—			
2	2	2				4	4		1	502200	502200-B	502200-C		3,4	AS-113	15	1"				—						—			
					1	2	2				502200-E			6	AS-114	5	¾"				—						—			
	2				2		2	2							AS-115	8	½"				—						—			
														1,3	~~AS-116~~	~~3~~	~~1½"~~				~~B16.10~~	~~CAST STEEL~~	~~A216 GR.WCB~~			—	~~MONEL~~			HORIZ
		2							1						AS-117	3	1"					FORGED STEEL	A105-GR.II			STAIN. STL.	—			GLOBE
								4		50001					AS-118	4	1½"	866	555	600#				—	—	—	—			DIAPH
										502200					AS-119	1	¾"	150	411	150#	B16.10	FORGED STEEL	A105-GR.II	STAIN. STL.	STAIN. STL.	STAIN. STL.	—			GATE
						1				500020	—			6	AS-120	1	2½"	866	555	600#		—	—	—	—	—	—			CONTR
						1	1			500001	—			6	AS-121	2	2"					—	—	—	—	—	—			
							1			500020	—			6	AS-122	1	2"					—	—	—	—	—	—			
1										500016	—			6	AS-123	1	2"					—	—	—	—	—	—			
	1										—			6	AS-124	1	1"	150	411	150#		—	—	—	—	—	—			
						1				500047	—			6	AS-125	1	¾"					—	—	—	—	—	—			
		1								—	—			6	AS-126	1	½"					—	—	—	—	—	—			
						2				500047	—			6	AS-127	2	¾"					—	—	—	—	—	—			GATE V
						1	1			500031	—			3,6	AS-128	2	1½"					—	—	—	—	—	—			SOLENO
						3	3			50001				3	AS-129	6	¾"	600	900	600#								SOCKET WELD		HORIZ
						6	6			50001				3,4	AS-130	12	¾"			600#		FORG. CHROME-MOLY						SOCKET WELD		GLOBE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-9

FRAME 1 OF 2

LIST OF PIPES

CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT	AMOUNT REQ'D BLK.	AMOUNT REQ'D GALV.	AMOUNT REQ'D TOTAL	SIZE	SCH NO.	WALL THK	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
		AS-1	250'-0"	—	250'-0"	4"	80	0.337	866	555	B36.10	SEAMLESS STEEL	A-106 GR.B		I	1590#	NOTE NOS. 128,135&136
		AS-2	180'-0"	—	180'-0"	3"		0.300									128,135&136
		AS-3	180'-0"	—	180'-0"	2½"		0.276									128,135&136
	3,4	AS-4	310'-0"	—	310'-0"	2"		0.218									128,135&136
		AS-5	200'-0"	—	200'-0"	1"		0.147									128,135&136
	1	AS-6	10'-0"	—	10'-0"	10"		0.594									128,135&136
	3,4	AS-7	182'-0"	—	182'-0"	1½"		0.200									128,135&136
	~~1~~	~~AS-10~~	~~100'-0"~~	~~—~~	~~100'-0"~~	~~10"~~	~~40~~	~~0.365~~	~~150~~	~~411~~	~~B36.10~~	~~STEEL~~	~~A53 GR.B~~		~~II~~	~~245~~	~~NOTE NOS. 128,135~~
	1	AS-11	140'-0"	—	140'-0"	2½"	40	0.203	150	411	B36.10	STEEL	A106 GR.B		I	248	NOTE NOS. 128,135&136
	1	AS-12	220'-0"	—	220'-0"	2"		0.154				SEAMLESS STEEL	A106 GR.B				128,135&136
	4,5	AS-13	300'-0"	—	300'-0"	1½"		0.145									128,135&136
	1,3	~~AS-14~~	~~100'-0"~~	—	~~100'-0"~~	~~1¼"~~		~~0.140~~									~~128,135&136~~
	1,3	AS-15	200'-0"	—	200'-0"	1"		0.133									128,135&136
	1,5	AS-16	100'-0"	—	100'-0"	¾"		0.113									128,135&136
	1	AS-17	200'-0"	—	200'-0"	½"		0.109									128,135&136
	2,4	AS-18	40'-0"	—	40'-0"	4"	40	0.237	125						II		128,135&136

LIST OF VALVES

CODE NO. (FUTURE USE)	ALT NO.	VALVE IDENT	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	PRESS STD	ANSI DIM. STD	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	PIN WHERE REQ'D	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO.
		AS-100	1	10"	866	555	600#	B16.10	CAST CHROME-MOLY	A 217 GR.WC6	STAIN. STL.	STAIN. STL.	STAIN. STL.	—	FLGD. F&D.	B16.5	GLOBE	NOS. 2,3,4,8,9,23,95,90-93	EDWARD FIG.#616
		AS-101	2	4"			600#		CAST CHROME-MOLY	A 217 GR.WC6				—			GLOBE	2,4,6,8,95,90-93	EDWARD FIG.#618
		AS-102	2	4"										—			GLOBE STOP CHECK-NON CHATTERING TYPE	2,4,6,7,8,95,90-93	FIG.#604
		AS-103	2	3"										—			GLOBE	2,4,6,95,90-93	FIG.#618
		AS-104	5	2½"										—				2,4,6,95,90-93	FIG.#618
		AS-105	6	2"					FGD. CHROME-MOLY	A182 GR.F-11				—				4,5,90-93	FIG.#828
		AS-106	3	1"										—				4,5,90-93	FIG.#828
		AS-107	5	¾"										—				4,5,90-93	FIG.#828
		AS-108	14	½"										—				4,5,90-93	FIG.#828
		AS-109	6	2½"	150	411	150#		CAST STEEL	A216 GR.WCB				—			GLOBE	4,6,90-93	LUNKENH. FIG.#1542
	4	AS-110	8	2"										—				4,6,90-93	FIG.#1542
		AS-111	10	1½"				—	FORGED STEEL	A105-GR.II				—				4,6,90-93	FIG. 1110-MOD
	1	AS-112	7	1¼"				—						—				4,6,90-93	FIG. 1110-MOD
	3,4	AS-113	15	1"				—						—				4,6,90-93	FIG. 1110-MOD
		AS-114	5	¾"				—						—				4,6,90-93	FIG. 1110-MOD
		AS-115	8	½"				—						—				4,6,90-93	FIG. 1110-MOD
	1,3	~~AS-116~~	~~3~~	~~1½"~~				~~B16.10~~	~~CAST STEEL~~	~~A216 GR.WCB~~			—	~~MONEL~~			~~HORIZONTAL SWING CHECK~~	~~10,90-93~~	~~LUNKENH. FIG. 1572~~
		AS-117	3	1"					FORGED STEEL	A105-GR.II			STAIN. STL.	—			GLOBE STOP-CHECK	4,6,90-93	LUNKENH. FIG. 1170-X-M
		AS-118	4	1½"	866	555	600#				—	—	—				DIAPHRAGM OPERATED POPPET VALVE	VENDOR FURNISHED	DIAMOND POWER BABCOCK & WILCOX
		AS-119	1	¾"	150	411	150#	B16.10	FORGED STEEL	A105-GR.II	STAIN. STL.	STAIN. STL.	STAIN. STL.	—			GATE VALVE	NOS. 4,6,90-93	LUNKENH. FIG. 1100W
		AS-120	1	2½"	866	555	600#		—	—	—	—	—	—			CONTROL VALVE	NOTE NO. 96	LESLIE
		AS-121	2	2"					—	—	—	—	—	—				VENDOR FURNISHED	
		AS-122	1	2"					—	—	—	—	—	—				NOTE NO. 96	
		AS-123	1	2"					—	—	—	—	—	—				NOTE NO. 96	
		AS-124	1	1"	150	411	150#		—	—	—	—	—	—				NOTE NO. 96	
		AS-125	1	¾"					—	—	—	—	—	—				VENDOR FURNISHED	
		~~AS-126~~	~~1~~	~~½"~~					—	—	—	—	—	—					—
		AS-127	2	¾"					—	—	—	—	—	—			GATE VALVE		—
	3,4	AS-128	2	1½"					—	—	—	—	—	—			SOLENOID VALVE		—
	3	AS-129	6	¾"	600	900	600#								SOCKET WELD		HORIZONTAL SWING CHECK	VENDOR FURNISHED	ROCKWELL FIG.# 838-Y
	3,4	AS-130	12	¾"			600#		FORG. CHROME-MOLY						SOCKET WELD		GLOBE		R.P.C. STYLE F-81

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	12-10-76		1. ADDED AS-6 2. DELETED AS-10 3. REVISED U.S.C.G. CLASS FROM CLASS II TO CLASS I FOR AS-11 THRU AS-17 4. REVISED SIZE OF AS-112 FROM 1¼" TO 1½" (BD-XXX) 5. DELETED NOTE NO. 4 FROM AS-116	G.L.W.	G.G.S. LTY
2	6-8-77		1. ADDED AS-18	PCG	
3	10/29/77		1-AS-7 ADDED TO LIST. 2-AS-14 DELETED FROM LIST. 3-INCREASED PIPE AS-4 FROM 180'-0" TO 280'-0" PER SHIP. 4-INCREASED PIPE AS-15 FROM 100'-0" TO 200'-0" PER SHIP. 5-INCREASED VALVE NO. AS-113 FROM 6 TO 10 REQ'D. 6-DELETED VALVE NO. AS-116 FROM LIST. 7-ADDED VALVE NOS. AS-129 & AS-130 TO LIST. 8-INCREASED VALVE NO. AS-128 FROM 1 TO 2 REQD. PER SHIP.	F.J.D.	
4	2-27-78		1. REVISED THE QTY FOR: AS-4 (280' TO 310'), AS-7 (100' TO 182'), AS-13 (220' TO 260'), AS-110 (4-8), AS-113 (10-15). 2. REVISED AS-130. CHG'D THE QTY (6-12), SIZE (½ TO ¾"), & MAN. DWG. (ROCKWELL D-473813 TO R.P.C. STYLE F-81). 3. REVISED AS-18. CHG'D DESIGN CRITERIA (150 TO 125) & USCG CLASS (I TO II).	RAM	
5	8-3-78		1. INCREASE AS-13 FROM 260' TO 300' & AS-16 FROM 80' TO 100'.	GGK	
6	10-4-78		1. ADDED REQ NO. TO ITEMS: AS-120 THRU AS-125 AS-127 AND AS-128. 2. DELETED ITEM AS-126 3. AS-114 QTY INCR. FROM 4 TO 5	LPK	

HULL	DESIGN	CHARGE
4651	27,340 DWT CONTAINERSHIP	8450
4650		8430

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 2 SEPT. 1976
DRAWN G.L.W.
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-371-09-9
ALT. NO. 6

PIPE & VALVE LIST FOR AUXILIARY STEAM SYSTEM

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	10-12-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

M-712

DATE OF ISSUE	
ALTERATION	[illegible]
ENGINEERING DISTRIBUTION	[illegible]
MAIL: OWNERS	[illegible]
AMERICAN BUREAU	[illegible]
LLOYD'S R.S.	[illegible]
U.S.M.A.	[illegible]
U.S. NAVY	[illegible]
U.S.C.G.	[illegible]
JOINER CONT'R.	[illegible]
INSPECTION: OWNER'S INSP.	[illegible]
AM. BU. INSP.	[illegible]
LLOYD'S INSP.	[illegible]
U.S.M.A. INSP.	[illegible]
U.S. NAVY INSP.	[illegible]
U.S.C.G. INSP.	[illegible]
OFFICE: HULL DRAFT.-21	[illegible]
MACH. DRAFT.-22	[illegible]
ELEC. DRAFT.-23	[illegible]
OUTFIT DRAFT.-25	[illegible]
ESTIMATING	[illegible]
J. DOUGHERTY (CYO)	[illegible]
MISC.: PRODUCTION (BCD)	[illegible]
ORDER DEPT.	[illegible]
JOINER CONT. YARD	[illegible]
TOTAL ENG'R. DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
YARD: LAB. OFFICE	[illegible]
T. SIMMONS	[illegible]
PIECE RATE-11	[illegible]
TEST DEPARTMENT	[illegible]
QUALITY ASSURANCE	[illegible]
STEEL PLANNING	[illegible]
STRUCTURAL: GROUND ASSEMBLY	[illegible]
35 DEPT.	[illegible]
F. McNAIR	[illegible]
H. LEVY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
STRUCT. SUPER.	[illegible]
OPTICAL DETAIL-45	[illegible]
WET DOCK	[illegible]
MACH'Y & OUTFIT: PIPE SHOP-52	[illegible]
OUTFIT. #1 PIER	[illegible]
PIPE DRAFT-52	[illegible]
BOILER SHOP-58	[illegible]
OUTSIDE MACH.-60	[illegible]
Q-MAT'L	[illegible]
ELECTRIC SHOP-70	[illegible]
SHEET MET. SHOP-74	[illegible]
COPPER SHOP-51	[illegible]
PAINT SHOP-75	[illegible]
OTHER: WELDING	[illegible]
MOLD LOFT-41	[illegible]
BRACKET SHOP	[illegible]
TOTAL YARD DIST.	[illegible]

4650-51-REPL.
4650-51-REPL.
4650-51-REPL.
4650-51-REPL.
4650-51-REPL.

4650-51-ALT. 1
4650-51-ALT. 2
4650-51-ALT. 3
4650-51-ALT. 4
4650-51-ALT. 5
4650-51-ALT. 6

____ SQ. FT.

M-4650-371-09-9

PIPING PACKAGE UNIT APPLICATION

LIST OF PIPES

STRUCTURAL MODULAR UNIT APPLICATION											REQUISITION NO			CODE NO (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D.			SIZE	SCH NO.	WALL THK	DESIGN CRITERIA		ANSI DIM.STD	DESCRIPTION	ASTM SPEC.
UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #13	UNIT #14	UNIT #15							BLK.	GALV.	TOTAL				P.S.I.	°F			
	18'		12'			2'-6"	35'				502244					AS-1	200'-0"	—	200'-0"	4"	80	0.337	866	555	B36.10	SEAMLESS STEEL	A-106 GR.B
						46'	27'									AS-2	180'-0"	—	180'-0"	3"		0.300					
						58'	6'									AS-3	180'-0"	—	180'-0"	2½"		0.276					
		20'		530'		136'	102'					502244-H	502244-J		3,4	AS-4	310'-0"	—	310'-0"	2"		0.218					
		15'		20'		20'	20'									AS-5	200'-0"	—	200'-0"	½"		0.147					
						5'					502244-B				1	AS-6	10'-0"	—	10'-0"	10"		0.594					
							2'-0"	180'			502244-H	502244-J			3,4	AS-7	182'-0"	—	182'-0"	1½"		0.200					
															1	~~AS-10~~	~~10'-0"~~	~~—~~	~~10'-0"~~	~~10"~~	~~40~~	~~0.365~~	~~150~~	~~411~~	~~B36.10~~	~~STEEL~~	[illegible]
	16						20'	100'			502244				1	AS-11	140'-0"	—	140'-0"	2½"	40	0.203	150	411	B36.10	STEEL	A106 GR.B
45'					35'	65'	42'	30'							1	AS-12	220'-0"	—	220'-0"	2"		0.154				SEAMLESS STEEL	A106 GR.B
	60'	40'			40'	30'	40'	65'		15'-0"		502244-J	502244-K		1,4,5	AS-13	300'-0"	—	300'-0"	1½"		0.145					
					~~2~~										1,3	~~AS-14~~	~~100'-0"~~	—	~~100'-0"~~	~~1¼"~~		~~0.140~~					
10'	12'	50'				30'	80'		7'			502244-H			1,3	AS-15	200'-0"	—	200'-0"	1"		0.133					
					3'	40'	40'					502244-K			1,5	AS-16	100'-0"	—	100'-0"	¾"		0.113					
	16'					55'	45'								1	AS-17	200'-0"	—	200'-0"	½"		0.109					
40'											502244-G				2,4	AS-18	40'-0"	—	40'-0"	4"	40	0.237	125				

PIPING PACKAGE UNIT APPLICATION

LIST OF VALVES

STRUCTURAL MODULAR UNIT APPLICATION											REQUISITION NO			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA		PRESS STD	ANSI DIM.STD	BODY MATERIAL	ASTM SPEC.	TRIM				END TYPE	ANSI DIM.STD	
UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #13	UNIT #14	UNIT #15									P.S.I.	°F					SEAT	DISC	STEM	PIN WHERE REQ'D.			
						1					502200					AS-100R	1	10"	866	555	600#	B16.10	CAST CHROME-MOLY	A217 GR.WC6	STAIN. STL.	STAIN. STL.	STAIN. STL.	—	FLGD. F&D.	B16.5	GLOB
1							1									AS-101	2	4"			600#		CAST CHROME-MOLY	A217 GR.WC6				—			GLOBE
						1	1									AS-102	2	4"										—			GLOBE
						7										AS-103	7	3"										—			GLOB
						4	1									AS-104	5	2½"										—			
1				1		2	2									AS-105	6	2"					FGD. CHROME-MOLY	A182 GR.F-11				—			
1						1	1									AS-106	3	1"										—			
1						3	1									AS-107	5	¾"										—			
						2	2									AS-108	14	½"										—			
	3						1	2								AS-109	6	2½"	150	411	150#		CAST STEEL	A216 GR.WCB				—			GLOB
						2	2	1				502200-C			4	AS-110	5	2"										—			
	3					3	4									AS-111	10	1½"				—	FORGED STEEL	A105-GR.II				—			
					2						502200-A				1	AS-112	2	1¼"				—						—			
2	2	2				4	4		1		502200	502200-B	502200-C		3,4	AS-113	15	1"				—						—			
					1	2	2					502200-E			6	AS-114	5	¾"				—						—			
	2				2		2	2								AS-115	8	½"				—						—			
															1,3	~~AS-116~~	~~3~~	~~1½"~~				~~B16.10~~	CAST STEEL	A216 GR.WCB			—	MONEL			HORIZ
		2							1							AS-117	3	1"					FORGED STEEL	A105-GR.II			STAIN. STL.	—			GLOBE
								4			50001					AS-118	4	1½"	866	555	600#				—	—	—	—			DIAPH
											502200					AS-119	1	¾"	150	411	150#	B16.10	FORGED STEEL	A105-GR.II	STAIN. STL.	STAIN. STL.	STAIN. STL.	—			GATE
						1					500020	—			6	AS-120	1	2½"	866	555	600#		—	—	—	—	—	—			CONTR
						1	1				500001	—			6	AS-121	2	2"					—	—	—	—	—	—			
							1				500020	—			6	AS-122	1	2"					—	—	—	—	—	—			
1											500016	—			6	AS-123	1	2"					—	—	—	—	—	—			
	1											—			6	AS-124	1	1"	150	411	150#		—	—	—	—	—	—			
						1					500047	—			6	AS-125	1	¾"					—	—	—	—	—	—			
		1									~~—~~	—			6	~~AS-126~~	~~1~~	~~½"~~					—	—	—	—	—	—			
						2					500047	—			6	AS-127	2	¾"					—	—	—	—	—	—			GATE V
						1	1				500031	—			3,6	AS-128	2	1½"					—	—	—	—	—	—			SOLENO
						3	3				50001				3	AS-129	6	¾"	600	900	600#								SOCKET WELD		HORIZ
						6	6				50001				3,4	AS-130	12	¾"			600#		FORG. CHROME-MOLY						SOCKET WELD		GLOBE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-9

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-10

FRAME 1 OF 2

LIST OF FLANGES

REQUISITION NO	ALT NO	FLANGE IDENT NO	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD	MATERIAL	ASTM SPEC	TYPE		SERVICE	CODE NO	SPECIAL NOTES FROM REF #1	CAT. OR DRWG. NO.
		AS-200	1	10"	866	555	1590*	900#	B16.5	FORGED STEEL	A-105	WELD NECK FLG., F.F.D.	BORE FOR SCH 80 PIPE	AUX. STEAM SYSTEM - DESUPERHEATED STEAM		NOS. 90-93	TUBE TURN. PT. #33
		AS-201	19	4"													
		AS-202	19	3"													
		AS-203	14	2½"													#152
		AS-204	[illegible]	2"								SOCKET WELD FLG., F.F.D.					
		AS-205	15	1½"													
		AS-206	2	1"													
		AS-207	12	¾"													
		AS-208	15	½"													
		AS-209	6	[illegible]								SOCKET WELD REDUCING FLG., F.F.D.					#152 MOD
		AS-210	3	4"				900#				WELD NECK FLG., F.F.D.					#34
		AS-211	1	4"				900#				BLIND FLG., F.F.D.		TO L.P. TURBINE			#73
		AS-212	1	2"				300#				SOCKET WELD FLG., F.F.D.	BORE FOR SCH 80 PIPE	AUX. STEAM SYSTEM - DESUPERHEATED STEAM			#151
		AS-213	4	1½"				300#									
		AS-215	1	5"	150	411	284*	150#	B16.5	FORGED STEEL	A-105	SLIP-ON FLG., F.F.D.		150# AUX. STEAM		NOS. 90-93	TUBE TURN PT. #50
		AS-216	11	4"													
		AS-217	2	3"													
		AS-218	32	2½"													
		AS-219	2	2½"								BLIND FLG., F.F.D.		-SHORE STM.			#70
		AS-220	35	2"								SOCKET WELD FLG., F.F.D.	BORE FOR SCH. 40 PIPE				#150
		AS-221	39	1½"													#151
		AS-222	2	1"				300#									#150
		AS-223	36	1"				150#									
		AS-224	21	¾"													
		AS-225	35	½"													
		AS-226	4	1½"													#151
		AS-227	1	[illegible]				300#									
		AS-228	1	[illegible]								REDUCING	BORE FOR SCH. 80 PIPE				#151 MOD
		AS-229	4	12½x2½	—	—	—	—	—	STEEL	[illegible]	BHD. FLANGE (12½" O.D. x 2.22" I.D. x 1⅛" THK. W/8 - ⅝" HOLES ON 10⅝" D.B.C.)				SEE DET. "3-D" M4650-111-27	
		AS-230	4	12½x8½	—	—	—	—	—			BHD. FLANGE (12½" O.D. x 8½" I.D. x ⅞" THK. W/8 TAPPED HOLES FOR ⅝"-11UNC STUDS ON 10⅝" D.B.C.)					

LIST OF GASKETS

REQUISITION NO	ALT NO	GASKET IDENT NO	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD	MATERIAL	ASTM SPEC	TYPE	SERVICE	CODE NO	REMARKS	CAT. OR DRWG. NO.
		AS-300	2	10"	866	555	1590	900#	—	STAINLESS STEEL	TYPE 347	SPIRAL WOUND GASKET - W/STNS. ST'L OUTER RING	AUX. STEAM SYSTEM - DESUPERHEATED STEAM			FLEXITALLIC "CG"
		AS-301	17	4"					—							
		AS-302	15	3"					—							
		AS-303	14	2½"					—							
		AS-304	[illegible]	2"					—							
		AS-305	18	1½"					—							
		AS-306	4	1"					—							
		AS-307	14	¾"					—							
		AS-308	14	½"					—							
		AS-309	4	4"				900#	—							
		AS-310	1	2"				300#	—							
		AS-311	4	1½"				300#	—							
		AS-315	1	5"	150#	411°	284*	150#	—	STAINLESS STEEL	TYPE 304	SPIRAL WOUND GASKET - W/CARBON ST'L OUTER RING	150# AUX. STEAM			FLEXITALLIC "CG"
		AS-316	6	4"					—							
		AS-317	2	3"					—							
		AS-318	25	2½"					—							
		AS-319	18	2"					—							
		AS-320	32	1½"					—							
		AS-321	3	1¼"					—							
		AS-322	39	1"					—							
		AS-323	19	¾"					—							
		AS-324	20	½"					—							
		AS-325	1	2"				300#	—							
		AS-326	1	3"					—							
		AS-327	8	12½x8½	—	—	—	—		COMP. ASBESTOS	[illegible]	GASKET - FULL FACE (12½" O.D. x 8½" I.D. x ⅛" THK. W/8 - ⅝" DIA. HOLES ON 10⅝" D.B.C.)	(FOR AS-229 & AS-230)		DET. "S-D" ON M4650-111-27	JOHNS-MANVILLE #60
		AS-328	1	1"	150#	411#	284*	300#		STAINLESS STEEL	TYPE 304	SPIRAL WOUND GASKET - W/CARBON STL. OUTER RING				FLEXITALLIC "CG"

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO	ALT NO	BOLTING IDENT NO	AMT REQ'D	STUDS MATERIAL ASTM	STUDS DIA	STUDS LGTH	STUDS ANSI DIM STD	HVY. HEX NUTS (SEMI-FINISHED) TWO (2) PER STUD MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	HVY. HEX. BOLTS MATERIAL ASTM	BOLTS DIA	BOLTS LGTH	BOLTS ANSI DIM STD	HVY. HEX. NUTS (SEMI-FINISHED) MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	SERVICE	CODE NO	REMARKS
		AS-400	32	A-193 GR. B-7	1⅛"	8¼"	[illegible] UN-2A	A-194 GR. 2H	1⅛"	[illegible]	866	555								FOR 10"-600# JOINT		
		AS-401	[illegible]		⅞"	5½"	[illegible] UNC-2A		⅞"	[illegible]										4"-		
		AS-402	152		¾"	4⅝"			¾"											3"-		
		AS-403	128		¾"	4½"			¾"											2½"-		
		AS-404	[illegible]		⅝"	4"			⅝"											2"-		
		AS-405	44		⅝"	4"			⅝"											1½"-		
		AS-406	48		½"	3½"			½"											1"-		
		AS-407	60		½"	3¼"			½"											¾"-		
		AS-408	60		½"	3"			½"											½"-		
		AS-409	32		1⅛"	6½"	[illegible] UN-2A		1⅛"											4"-900#		
		AS-410	32		⅝"	3¾"			⅝"											2"-300#		
		AS-411	8								150	411	A-193 GR. B-7	¾"	3¼"	B1.1, B18.2.1 UNC-2A	A-194 GR. I	¾"	B18.2.2 UNC-2B	FOR 5" 150# JOINT		
		AS-412	136											⅝"	3"			⅝"		4, 3 & 2½" 150# JOINT		
		AS-413	80											⅝"	2⅝"			⅝"		2"		
		AS-414	156											½"	2¼"			½"		1½" & 1¼"		
		AS-415	236											½"	2"			½"		1" & ¾"		
		AS-416	80											½"	1¾"			½"		½"		
		AS-417	8	A-193 GR. B-7	⅝"	4¼"	B1.1 UNC-2A	A-194 GR. 2H	⅝"	B18.2.2 UNC-2B	150	411								FOR 3"-300# JOINT		
		AS-418	16		⅝"	3¾"			¾"											1½"-300#		
		AS-419	32		½"	2¾"			½"											½"-300#		
		AS-420	4		⅝"	[illegible]			⅝"		150	411								1"-300#		
		AS-421	[illegible]										A-307 GR. B	⅝"	1¾"	B1.1, B18.2.1 UNC-2A	A-307 GR. B	⅝"	B18.2.2 UNC-2B	SEE DET. "4-D" ON M4650-[illegible]		
		AS-422	4											⅝"	2½"			⅝"				

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	11/3/77	ALL	1-DECREASED AMT. OF AS-200 FROM 3 TO 1 2-INCREASED AMT. OF AS-201 FROM 10 TO 17 " AS-203 " 12 TO 14 " AS-204 " 18 TO 47 " AS-205 " 8 TO 15 " AS-218 " 20 TO 32 " AS-220 " 6 TO 24 " AS-221 " 20 TO 35 " AS-224 " 6 TO 11 3-ADDED AS-212 & AS-213 TO FLANGE LIST. 4-DEC. QUAN OF AS-227 FROM 2 TO 4 & CHANGED SIZE FROM 5 X 1 IN TO 1" & PRESS. FROM 150# TO 300# 5-ADDED FLANGE AS-227 THRU AS-230 TO LIST. GASKET LIST 1-INCREASED AMT. OF AS-301 FROM 6 TO 15 " AS-304 " 18 TO 30 " AS-305 " 6 TO 18 " AS-318 " 12 TO 25 " AS-319 " 6 TO 17 " AS-320 " 15 TO 29 " AS-322 " 22 TO 29 " AS-323 " 4 TO 9 2-ADDED AS-310 AND AS-311 AND AS-325 THRU AS-328. LIST OF STUDS & BOLTS 1-INCREASED AMT. OF AS-401 FROM 64 TO 112 AS-402 " 136 TO 152 AS-403 " 112 TO 128 AS-404 " 120 TO 192 AS-405 " 24 TO 44 AS-412 " 96 TO 136 AS-413 " 24 TO 80 AS-414 " 72 TO 156 AS-415 " 104 TO 200 2-ADDED AS-410 TO STUD LIST, AND ADDED AS-417 THRU AS-420 TO BOLT LIST.	F.J.D.	
2	3-28-78		1. INCR. THE QTY FOR: AS-204 (47-50), AS-220 (24-35), AS-221 (35-37), AS-224 (11-21), AS-319 (17-18), AS-320 (29-30), AS-322 (29-39), AS-323 (9-19), AS-415 (200-236).	KHM	3-31-78
3	4-27-78		1. REVISED QTY OF ITEMS: AS-204 FROM 50 TO 54 AS-201 17 19 AS-301 15 17 AS-304 30 34 AS-401 112 120 AS-404 194 224 2. ADDED ITEMS AS-421 AND AS-422	L.P.K.	5-8-78
4	10-4-78 1-31-79		1. REVISE QTY OF ITEM: AS-204 FROM 54 TO 68 AS PER Y.I.S. 4650-22-285 & 285-A 2. AS-221 - QTY 39 WAS 37 AS-320 - QTY 32 WAS 30 AS-309 QTY 4 WAS 3	L.P.K. EJK	2-6-79

HULL	DESIGN	CHARGE
4651	23,340 D.W.T. CONTAINERSHIP	10-8450
4650		

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE DEC. 8, 1976
DRAWN G.L. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED J.E.H.
APPROVED

PLAN NO. M-4650-371-09-10
ALT. NO. 4

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR AUXILIARY STEAM SYSTEM

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	10-12-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

UAO-50131-A

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

M-713

ALTERATION	DATE OF ISSUE
ENGINEERING DISTRIBUTION	
OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R.	
OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT - 21	
MACH. DRAFT - 22	
ELEC. DRAFT - 23	
OUTFIT DRAFT - 25	
ESTIMATING	
J. DOUGHERTY	
PRODUCTION (BCD)	
ORDER DEPT.	
JOINER CONT'RACT	
TOTAL ENG'R. DIST.	
YARD DISTRIBUTION	
GRM	
PIECE RATE - 11	
TEST DEPARTMENT	
GROUND ASSEMBLY	
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL - 46	
WET DOCK	
PIPE SHOP - 52	
OUTFIT - PIER	
PIPE DRAFT - 52	
BOILER SHOP - 56	
OUTSIDE MACH. - 60	
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 51	
PAINT SHOP - 75	
WELDING	
MOLD LOFT - 41	
BRACKET SHOP	
TOTAL YARD DIST.	

M-4650-371-09-10

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-10

FRAME 2 OF 2

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
502201-II			1	AS-200	1	10"	866	555	1,590#	600#	B16.5	FORGED STEEL	A-105	WELD NECK FLG., F.F.D. BORE FOR SCH 80 PIPE	AUX. STEAM SYSTEM-DE
502201	502201-E	502201-B	1,3	AS-201	19	4"									
				AS-202	19	3"									
	502201-B		1	AS-203	14	2½"								SOCKET WELD FLG., F.F.D.	
	502201-E/A	502201-D 502201-B	1,2,3,4	AS-204	68	2"									
		502201-B	1	AS-205	15	1½"									
				AS-206	2	1"									
				AS-207	16	¾"									
				AS-208	15	½"									
				AS-209	6	4"x1½"								SOCKET WELD REDUCING FLG.; F.F.D.	
				AS-210	3	4"				900#				WELD NECK FLG., F.F.D.	
				AS-211	1	4"				600#				BLIND FLG., F.F.D.	TO L.P. TURB
502201-B			1	AS-212	1	2"				300#				SOCKET WELD FLG., F.F.D. BORE FOR SCH 80 PIPE	AUX. STEAM SYSTEM-DE
			1	AS-213	4	1½"				300#					
502201				AS-215	1	5"	150	411	286#	150#	B16.5	FORGED STEEL	A-105	SLIP-ON FLG., F.F.D.	150# AUX. STEAM
				AS-216	11	4"									
				AS-217	2	3"									
	502201-B		1	AS-218	32	2½"									
				AS-219	2	2½"								BLIND FLG., F.F.D.	-SHOR
	502201-B	502201-D	1,2	AS-220	35	2"								SOCKET WELD FLG., F.F.D. BORE FOR SCH 40 PIPE	
		502201-E 502201-D	1,2,4	AS-221	39	1½"									
502201-B			1	AS-222	2	1"				300#					
502201				AS-223	36	1"				150#					
	502201-B	502201-D	1,2	AS-224	21	¾"									
				AS-225	35	½"									
				AS-226	4	1¼"									
502201-B			1	AS-227	1	2"				300#					
			1	AS-228	1	8⅝"OD x 8"								REDUCING BORE FOR SCH 80 PIPE	
* UAO			1	AS-229	4	12½"x2½"	—	—	—	—	—	STEEL	ABS GR A	BHD. FLANGE (12½" O.D. x [illegible] THK. W/8-[illegible] HOLES ON [illegible] D.B.C.)	
* UAO			1	AS-230	4	12½"x8½"	—	—	—	—	—			BHD. FLANGE (12½" O.D. x [illegible] THK. W/8 TAPPED HOLES FOR [illegible] STUDS ON [illegible] D.B.C.)	

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

STRUCTURAL MODULAR UNIT APPLICATION (flanges)

FLANGE IDENT NO.	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 13	UNIT 14	UNIT 15
AS-200							1				
AS-201	2	4		2			3	8			
AS-202							13	3			
AS-203							13	1			
AS-204	4				8		25	21			
AS-205								1	14		
AS-208								2			
AS-210		1					1	1			
AS-211		1									
AS-213									4		
AS-215	1										
AS-216	3										
AS-218		4						3	25		
AS-219									2		
AS-220	5		3			3	7	9	4		
AS-221		8	2			12		9	7		1
AS-222											2
AS-223		2	5				8	19		1	
AS-224						4	10	7			
AS-225		3				4		6	4		
AS-226						2					
AS-227									1		
AS-228									1		
AS-229									4		
AS-230									4		

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
502224				AS-300	2	10"	866	555	1590	600#	—	STAINLESS STEEL	TYPE 347	SPIRAL WOUND GASKET-W/STNS. ST'L. OUTER RING	AUX. STEAM SYSTEM-DE
SUPPLY			1,3	AS-301	17	4"					—				
				AS-302	15	3"					—				
				AS-303	14	2½"					—				
			1,3	AS-304	34	2"					—				
			1	AS-305	18	1½"					—				
				AS-306	4	1"					—				
				AS-307	14	¾"					—				
				AS-308	14	½"					—				
502224	502224-E		4	AS-309	4	4"				900#	—				
Supply			1	AS-310	1	2"				300#	—				
Supply			1	AS-311	4	1½"				300#	—				
502224				AS-315	1	5"	150#	411#	286#	150#	—	STAINLESS STEEL	TYPE 304	SPIRAL WOUND GASKET - W/CARBON ST'L. OUTER RING	150# AUX. STEAM
				AS-316	6	4"					—				
				AS-317	2	3"					—				
	502224-A		1	AS-318	25	2½"					—				
			1,2	AS-319	18	2"					—				
		502224-E	1,2,4	AS-320	32	1½"					—				
				AS-321	3	1¼"					—				
	502224-A	502224-B	1,2	AS-322	39	1"					—				
			1,2	AS-323	19	¾"					—				
				AS-324	20	½"					—				
Supply			1	AS-325	1	2"				300#	—				
			1	AS-326	1	3"					—				
502224-A			1	AS-327	8	12½"x8½"	—	—	—	—		COMP. ASBESTOS	DITTO OR PUNA	GASKET - FULL FACE [illegible]	
Supply			1	AS-328	1	1"	150#	411#	286#	300#	—	STAINLESS STEEL	TYPE 304	SPIRAL WOUND GASKET - W/CARBON STL. OUTER RING	

STRUCTURAL MODULAR UNIT APPLICATION (gaskets)

GASKET IDENT NO.	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 13	UNIT 14	UNIT 15
AS-300							2				
AS-301	2	3		2			4	6			
AS-302							10	2			
AS-303							12	2			
AS-304	4				4		16	10			
AS-305							3	3	12		
AS-308								2			
AS-309		2					1	1			
AS-311									4		
AS-315	1										
AS-316	4										
AS-318		6						3	16		
AS-319	6					1		8	3		
AS-320		8	1			8		9	5		1
AS-321						2					
AS-322	4	2	6				8	15		4	
AS-323						4	10	5			
AS-324		3				4		6	4		
AS-325									1		
AS-326									1		
AS-327									8		
AS-328											1

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO.	BOLTING IDENT NO.	AMT REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	HVY. HEX. NUTS (SEMI-FINISHED) TWO (2) PER STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	HVY. HEX. BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD	HVY. HEX NUTS (SEMI-FINISHED) MATERIAL ASTM	DIA.	ANSI DIM STD
502229				AS-400	32	A-193 GR.B-7	1⅛"	8¼"	B1.1 8UN-2A	A-194 GR.2H	1⅛"	B18.2.2 & B1.1 8UN-2B	866	555							
	502229-A		1,3	AS-401	120		⅞"	5½"	B1.1 UNC-2A		⅞"	B18.2.2 & B1.1 UNC-2B									
			1	AS-402	152		¾"	4¾"			¾"										
			1	AS-403	128		¾"	4½"			¾"										
		502229-B	1,3	AS-404	224		⅝"	4"			⅝"										
			1	AS-405	44		¾"	4"			¾"										
				AS-406	48		⅝"	3½"			⅝"										
				AS-407	60		⅝"	3⅝"			⅝"										
				AS-408	60		½"	3"			½"										
				AS-409	32		1⅛"	6½"	B1.1 8UN-2A		1⅛"										
502229-A			1	AS-410	32		⅝"	3¼"			⅝"										
502230				AS-411	8								150	411	A-193 GR.B-7	¾"	3¼"	B1.1, B18.2.1 UNC-2A	A-194 GR. 2H	¾"	B18.2.2 & B1.1 UNC-2B
	502230-A		1	AS-412	136											⅝"	3"			⅝"	
			1	AS-413	80											⅝"	2¾"			⅝"	
			1	AS-414	156											½"	2¼"			½"	
			1,2	AS-415	236											½"	2"			½"	
				AS-416	80											½"	1¾"			½"	
502229-A			1	AS-417	8	A-193 GR.B-7	¾"	4¼"	B1.1 UNC-2A	A-194 GR.2H	¾"	B18.2.2 & B1.1 UNC-2B	150	411							
			1	AS-418	16		¾"	3¾"			¾"										
			1	AS-419	32		½"	2¾"			½"										
			1	AS-420	4		⅝"	3¼"			⅝"		150	411							
Supply			1	AS-421	4										A-307 GR.B	⅝"	1¾"	B1.1 B18.2.1 UNC-2A	A-307 GR.B	⅝"	B18.2.2 UNC-2B
Supply			1	AS-422	4											⅝"	2½"			⅝"	

STRUCTURAL MODULAR UNIT APPLICATION (studs, bolts & nuts)

BOLTING IDENT NO.	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 13	UNIT 14	UNIT 15
AS-400							32				
AS-401	16	24		8			24	48			
AS-402							120	16			
AS-403							96	16			
AS-404	32				16		80	96			
AS-405							4	4	36		
AS-408								8			
AS-409		16					8	8			
AS-410								8	8		
AS-411	8										
AS-412	32	16						12	64		
AS-413	24					4		32	12		
AS-414		32	4			36		36	20		4
AS-415	16	8	24			16	72	84		16	
AS-416		12				16		24	16		
AS-417									8		
AS-418									16		
AS-419									32		
AS-420											4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-10

FRAME 1 OF 2

LIST OF FLANGES

FLANGE IDENT NO.	AMT. REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM STD.	MATERIAL	ASTM SPEC	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
AS-200	1	10"	866	555	1590#	900#	B16.5	FORGED STEEL	A-105	WELD NECK FLG., F.F.D. BORE FOR SCH. 80 PIPE	AUX. STEAM SYSTEM-DESUPERHEATED STEAM		NOS. 90-93	TUBE TURN. PT. #33
AS-201	19	4"												
AS-202	19	3"												
AS-203	14	2½"												
AS-204	68	2"								SOCKET WELD FLG., F.F.D.				#152
AS-205	15	1½"												
AS-206	2	1"												
AS-207	12	¾"												
AS-208	12	½"												
AS-209	6	[illegible]								SOCKET WELD REDUCING FLG., F.F.D.				#152 MOD
AS-210	3	4"				900#				WELD NECK FLG., F.F.D.				#34
AS-211	1	4"				600#				BLIND FLG., F.F.D.	TO L.P. TURBINE			#73
AS-212	1	2"				300#				SOCKET WELD FLG., F.F.D. BORE FOR SCH. 80 PIPE	AUX. STEAM SYSTEM-DESUPERHEATED STEAM			#151
AS-213	4	1½"				300#								
AS-215	1	5"	150	411	226#	150#	B16.5	FORGED STEEL	A-105	SLIP-ON FLG., F.F.D.	150# AUX. STEAM		NOS. 90-93	TUBE TURN PT. #50
AS-216	11	4"												
AS-217	2	3"												
AS-218	32	2½"												
AS-219	2	2½"								BLIND FLG. F.F.D.	SHORE STM.			#70
AS-220	35	2"								SOCKET WELD FLG. F.F.D. BORE FOR SCH. 40 PIPE				#150
AS-221	39	1½"												
AS-222	2	1"				300#								#151
AS-223	36	1"				150#								#150
AS-224	21	¾"												
AS-225	35	½"												
AS-226	4	1½"												
AS-227	1	2"				300#								#151
AS-228	1	[illegible]								REDUCING BORE FOR SCH. 80 PIPE				#151 MOD
AS-229	4	[illegible]	—	—	—	—	—	STEEL	[illegible]	BHD. FLANGE ([illegible] O.D. x [illegible] I.D. x [illegible] THK. W/8-[illegible] HOLES ON [illegible] B.C.)			SEE DET. "S-D" M4650 [illegible]	
AS-230	4	[illegible]	—	—	—	—	—			BHD. FLANGE ([illegible] O.D. x [illegible] I.D. x [illegible] THK. W/8 TAPPED HOLES FOR [illegible] STUDS ON [illegible] B.C.)				

LIST OF GASKETS

GASKET IDENT NO	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM. STD	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
AS-300	2	10"	866	555	1590	900#	—	STAINLESS STEEL	TYPE 347	SPIRAL WOUND GASKET-W/STNS. ST'L OUTER RING	AUX. STEAM SYSTEM-DESUPERHEATED STEAM			FLEXITALLIC "CG"
AS-301	17	4"					—							
AS-302	15	3"					—							
AS-303	14	2½"					—							
AS-304	34	2"					—							
AS-305	18	1½"					—							
AS-306	4	1"					—							
AS-307	14	¾"					—							
AS-308	14	½"					—							
AS-309	4	4"				900#	—							
AS-310	1	2"				300#	—							
AS-311	4	1½"				300#	—							
AS-315	1	5"	150#	411#	226#	150#	—	STAINLESS STEEL	TYPE 304	SPIRAL WOUND GASKET-W/CARBON ST'L OUTER RING	150# AUX. STEAM			FLEXITALLIC "CG"
AS-316	6	4"					—							
AS-317	2	3"					—							
AS-318	25	2½"					—							
AS-319	18	2"					—							
AS-320	32	1½"					—							
AS-321	3	[illegible]					—							
AS-322	29	1"					—							
AS-323	19	¾"					—							
AS-324	20	½"					—							
AS-325	1	2"				300#	—							
AS-326	1	3"					—							
AS-327	8	[illegible]	—	—	—	—		COMPR. ASBESTOS	[illegible]	GASKET-FULL FACE [illegible]	(FOR AS-229 & AS-230)		DET. "S-D" ON M4650 [illegible]	JOHNS-MANVILLE #60
AS-328	1	1"	150#	411#	226#	300#		STAINLESS STEEL	TYPE 304	SPIRAL WOUND GASKET-W/CARBON STL. OUTER RING				FLEXITALLIC "CG"

LIST OF STUDS, BOLTS & NUTS

BOLTING IDENT NO.	AMT REQ'D	STUDS MATERIAL ASTM	STUDS DIA	STUDS LGTH	STUDS ANSI DIM STD	HVY. HEX NUTS (SEMI-FINISHED) TWO (2) PER STUD MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	HVY. HEX. BOLTS MATERIAL ASTM	BOLTS DIA	BOLTS LGTH	BOLTS ANSI DIM STD	HVY. HEX NUTS (SEMI-FINISHED) MATERIAL ASTM	NUTS DIA	NUTS ANSI DIM STD	SERVICE	CODE NO.	REMARKS
AS-400	32	A-193 GR. B-7	1⅛"	8¼"	[illegible]	A-194 GR. 2H	1⅛"	[illegible]	866	555								FOR 10"-600# JOINT		
AS-401	120		⅞"	5¾"	[illegible]		⅞"	[illegible]										4"		
AS-402	152		¾"	4¾"			¾"											3"		
AS-403	128		⅝"	4½"			⅝"											2½"		
AS-404	224		⅝"	4"			⅝"											2"		
AS-405	44		⅝"	4"			⅝"											1½"		
AS-406	[illegible]		⅝"	3½"			⅝"											1"		
AS-407	[illegible]		⅝"	3½"			⅝"											¾"		
AS-408	[illegible]		½"	3"			½"											½"		
AS-409	32		1⅛"	6½"	[illegible]		1⅛"											4"-900#		
AS-410	32		⅝"	3¼"			⅝"											2"-300#		
AS-411	8								150	411	A-193 GR. B-7	¾"	3¼"	[illegible]	A-194 GR. I	¾"	[illegible]	FOR 5"-150# JOINT		
AS-412	136											⅝"	3"			⅝"		4,3 & 2½" 150# JOINT		
AS-413	80											⅝"	2¾"			⅝"		2"		
AS-414	156											½"	2¼"			½"		1½ & 1¼"		
AS-415	236											½"	2"			½"		1" & ¾"		
AS-416	30											½"	1¾"			½"		½"		
AS-417	8	A-193 GR. B-7	¾"	4½"	[illegible]	A-194 GR. 2H	¾"	[illegible]	150	411								FOR 3"-300# JOINT		
AS-418	16		¾"	3¾"			¾"											1½"-300#		
AS-419	32		½"	2¾"			½"											½"-300#		
AS-420	4		⅝"	3½"			⅝"		150	411								1"-300#		
[illegible]	[illegible]										A-307 GR. B	⅝" ⅝"	[illegible] 2½"	B1.1 & B18.2.1 UNC 2A	A-307 GR. B	⅝" ⅝"	B18.2.2 UNC 2B	SEE DET. "4-D" ON MOD #8		

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	11/3/77	ALL	1-DECREASED AMT. OF AS-200 FROM 2 TO 1 2-INCREASED AMT. OF AS-201 FROM 10 TO 17 " AS-203 " 12 TO 14 " AS-204 " 18 TO 47 " AS-205 " 8 TO 15 " AS-218 " 20 TO 32 " AS-220 " 6 TO 24 " AS-221 " 20 TO 35 " AS-224 " 6 TO 11 3-ADDED AS-212 & AS-213 TO FLANGE LIST. 4-DEC. QUAN. OF AS-222 FROM 2 TO 4 & CHANGED SIZE FROM 5 X IN TO 1" & PRESS. FROM 150# TO 300# 5-ADDED FLANGE AS-227 THRU AS-230 TO LIST. GASKET LIST 1-INCREASED AMT. OF AS-301 FROM 6 TO 15 " AS-304 " 18 TO 30 " AS-305 " 6 TO 18 " AS-318 " 12 TO 25 " AS-319 " 6 TO 17 " AS-320 " 15 TO 29 " AS-322 " 22 TO 29 " AS-323 " 4 TO 9 2-ADDED AS-310 AND AS-311 AND AS-325 THRU AS-328. LIST OF STUDS & BOLTS 1-INCREASED AMT. OF AS-401 FROM 64 TO 112 AS-402 " 136 TO 152 AS-403 " 112 TO 128 AS-404 " 120 TO 192 AS-405 " 24 TO 44 AS-412 " 96 TO 136 AS-413 " 24 TO 80 AS-414 " 72 TO 156 AS-415 " 104 TO 200 2-ADDED AS-410 TO STUD LIST, AND ADDED AS-417 THRU AS-420 TO BOLT LIST.	EJ	D.
2	3-28-78		1. INCR. THE QTY FOR: AS-204 (47-50), AS-220 (24-35), AS-221 (35-37), AS-224 (11-21), AS-319 (17-18), AS-320 (29-30), AS-322 (29-39), AS-323 (9-19), AS-415 (200-236).	RWM	3-31-78
3	4-27-78		1. REVISED QTY OF ITEMS: AS-204 FROM 50 TO 54 AS-201 17 19 AS-301 15 17 AS-304 30 34 AS-401 112 120 AS-404 194 224 2. ADDED ITEMS AS-421 AND AS-422	L.P.K.	78
4	10-4-78 1-24-79		1. REVISE QTY. OF ITEM: AS-204 FROM 54 TO 68 AS PER Y.T.S. 4650-22-285 & 285-A 2. AS-221-QTY 39 WAS 37 AS-320-QTY 32 WAS 30 AS-309 QTY 4 WAS 3	L.P.K. EJK	79

HULL	DESIGN	CHARGE
4651	27,340 D.W.T. CONTAINERSHIP	10-8450
4650		

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE DATE DEC. 8, 1976
DRAWN C.L. WOLFORD APPROVED
TRACED APPROVED
CHECKED J.E.M. APPROVED

PLAN NO. M-4650-371-09-10 ALT. NO. 4

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR AUXILIARY STEAM SYSTEM

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	10-12-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

ALTERATION	DATE OF ISSUE
ENGINEERING DISTRIBUTION	
OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONTR.	
OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT-21	
MACH. DRAFT-22	
ELEC. DRAFT-23	
OUTFIT DRAFT-25	
ESTIMATING	
J. DOUGHERTY	
PRODUCTION	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R DIST.	
YARD DISTRIBUTION	
PIECE RATE-11	
TEST DEPARTMENT	
GROUND ASSEMBLY	
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL-46	
WET DOCK	
PIPE SHOP-52	
OUTFIT-GP PIER	
PIPE DRAFT-53	
BOILER SHOP-58	
OUTSIDE MACH.-60	
ELECTRIC SHOP-70	
SHEET MET. SHOP-74	
COPPER SHOP-51	
PAINT SHOP-75	
WELDING	
MOLD LOFT-41	
BRACKET SHOP	
TOTAL YARD DIST.	

SQ. FT.

UAO-50131-A

M-713

M-4650-371-09-10

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-10

FRAME 2 OF 2

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FLANGES

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 13	UNIT 14	UNIT 15	REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
						1					502201-IX			1	AS-200	1	10"	866	555	1,590#	600#	B16.5	FORGED STEEL	A-105	WELD NECK FLG.; F&D. BORE FOR SCH.80 PIPE	AUX. STEAM SYSTEM-DE
2	4		2			3	8				502201	502201-E	502201-B	1,3	AS-201	19	4"									
						13	3								AS-202	19	3"									
						13	1				-IX	502201-B		1	AS-203	14	2½"									
4				8		25	21					502201-E/F	502201-D 502201-G	1,2,3,4	AS-204	68	2"									
							1	14					502201-B	1	AS-205	15	1½"								SOCKET WELD FLG.; F&D.	
															AS-206	2	1"									
															AS-207	16	¾"									
							2								AS-208	15	½"									
															AS-209	6	600x1½"									
	1					1	1								AS-210	3	4"				900#				SOCKET WELD REDUCING FLG.; F&D.	
	1														AS-211	1	4"				600#				WELD NECK FLG., F&D.	
											502201-B			1	AS-212	1	2"				300#				BLIND FLG., F&D.	TO L.P. TURB
								4						1	AS-213	4	1½"				300#				SOCKET WELD FLG., F&D. BORE FOR SCH.80 PIPE	AUX. STEAM SYSTEM-DE
1											502201				AS-215	1	5"	150	411	286#	150#	B16.5	FORGED STEEL	A-105	SLIP-ON FLG.; F&D.	150# AUX. STEAM
3															AS-216	11	4"									
															AS-217	2	3"									
	4						3	25				502201-B		1	AS-218	32	2½"									
								2							AS-219	2	2½"									
5		3			3	7	9	4				502201-B	502201-D	1,2	AS-220	35	2"								BLIND FLG.; F&D.	-SHOR
	8	2			12		9	7		1			502201-G 502201-D	1,2,4	AS-221	39	1½"								SOCKET WELD FLG.; F&D. BORE FOR SCH.40 PIPE	
										2	502201-B			1	AS-222	2	1"				300#					
	2	5				8	19		1		502201				AS-223	36	1"				150#					
					4	10	7					502201-B	502201-D	1,2	AS-224	21	¾"									
	3				4		6	4							AS-225	35	½"									
					2										AS-226	4	1¼"									
								1			502201-B			1	AS-227	1	2"				300#					
								1						1	AS-228	1	8½"O.D.x2"								REDUCING BORE FOR SCH.80 PIPE	
								4			* UAO			1	AS-229	4	12½x2½	—	—	—	—	—	STEEL	ABS GR A	BHD. FLANGE (12½" O.D. x 2.44" I.D. x ⅝" THK. W/8-⅝" HOLES ON 10¾" D.B.C.)	
								4			* UAO			1	AS-230	4	12½x8½	—	—	—	—	—			BHD. FLANGE (12½" O.D. x 8½" I.D. x ⅝" THK. W/8 TAPPED HOLES FOR ⅝"-11 UNC STUDS ON 10¾" D.B.C.)	

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF GASKETS

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 13	UNIT 14	UNIT 15	REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
						2					502224				AS-300	2	10"	866	555	1590	600#	—	STAINLESS STEEL	TYPE 347	SPIRAL WOUND GASKET - W/STNS. ST'L. OUTER RING	AUX. STEAM SYSTEM-DE
2	3		2			4	6				SUPPLY			1,3	AS-301	17	4"					—				
						10	2								AS-302	15	3"					—				
						12	2								AS-303	14	2½"					—				
4				4		16	10							1,3	AS-304	34	2"					—				
						3	3	12						1	AS-305	18	1½"					—				
															AS-306	4	1"					—				
															AS-307	14	¾"					—				
							2								AS-308	14	½"					—				
	2					1	1				502224	502224-F		4	AS-309	4	4"				900#	—				
											Supply			1	AS-310	1	2"				300#	—				
								4			Supply			1	AS-311	4	1½"				300#	—				
1											502224				AS-315	1	5"	150#	411#	286#	150#	—	STAINLESS STEEL	TYPE 304	SPIRAL WOUND GASKET - W/CARBON ST'L. OUTER RING	150# AUX. STEAM
4															AS-316	6	4"					—				
															AS-317	2	3"					—				
	6						3	16				502224-A		1	AS-318	25	2½"					—				
6					1		8	3						1,2	AS-319	18	2"					—				
	8	1			8		9	5		1			502224-E	1,2,4	AS-320	32	1½"					—				
					2										AS-321	3	1¼"					—				
4	2	6				8	15		4			502224-A	502224-B	1,2	AS-322	39	1"					—				
					4	10	5							1,2	AS-323	19	¾"					—				
	3				4		6	4							AS-324	20	½"					—				
								1			Supply			1	AS-325	1	2"				300#	—				
								1						1	AS-326	1	3"					—				
								8			502224-A			1	AS-327	8	12½x8½	—	—	—	—		COMP. ASBESTOS	D1170 GR P1101A	GASKET - FULL FACE (12½" O.D. x 8½" I.D. x ⅛" THK. W/8-⅝" DIA HOLES ON 10¾" D.B.C.)	
										1	Supply			1	AS-328	1	1"	150#	411#	286#	300#	—	STAINLESS STEEL	TYPE 304	SPIRAL WOUND GASKET - W/CARBON STL. OUTER RING	

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF STUDS, BOLTS & NUTS

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 13	UNIT 14	UNIT 15	REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD.	HVY. HEX. NUTS (SEMI-FINISHED) TWO (2) PER STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	HVY. HEX. BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	HVY. HEX. NUTS (SEMI-FINISHED) MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.
						32					502229				AS-400	32	A-193 GR.B-7	1⅛"	8½"	B1.1 8UN-2A	A-194 GR.2H	1⅛"	B18.2.2 B1.1 8UN-2B	866	555							
16	24		8			24	48					502229-A		1,3	AS-401	120		⅞"	5½"	B1.1 UNC-2A		⅞"	B18.2.2 B1.1 UNC-2B									
						120	16							1	AS-402	152		¾"	4¾"			¾"										
						96	16							1	AS-403	128		¾"	4½"			¾"										
32				16		80	96						502229-B	1,3	AS-404	224		⅝"	4"			⅝"										
						4	4	36						1	AS-405	44		¾"	4"			⅝"										
															AS-406	48		⅝"	3½"			⅝"										
															AS-407	60		⅝"	3¾"			⅝"										
							8								AS-408	60		½"	3"			½"										
	16					8	8								AS-409	32		1⅛"	6½"	B1.1 8UN-2A		1⅛"										
							8	8			502229-A			1	AS-410	32		⅝"	3¼"			⅝"										
8											502230				AS-411	8								150	411	A-193 GR.B-7	¾"	3¼"	B1.1 B18.2.1 UNC-2A	A-194 GR. I	¾"	B18.2.2 B1.1 UNC-2B
32	16						12	64				502230-A		1	AS-412	136											⅝"	3"			⅝"	
24					4		32	12						1	AS-413	80											⅝"	2¾"			⅝"	
	32	4			36		36	20		4				1	AS-414	156											½"	2¼"			½"	
16	8	24			16	72	84		16					1,2	AS-415	236											½"	2"			½"	
	12				16		24	16							AS-416	80											½"	1¾"			½"	
								8			502229-A			1	AS-417	8	A-193 GR.B-7	¾"	4¼"	B1.1 UNC-2A	A-194 GR.2H	¾"	B18.2.2 B1.1 UNC-2B	150	411							
								16						1	AS-418	16		¾"	3¾"			¾"										
								32						1	AS-419	32		½"	2¾"			½"										
										4				1	AS-420	4		⅝"	3¼"			⅝"		150	411							
											Supply			1	AS-421	4										A-307 GR.B	⅝"	1¾"	B1.1 B18.2.1 UNC 2A	A-307 GR.B	⅝"	B18.2.2 UNC 2B
											Supply				AS-422	4											⅝"	2½"			⅝"	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-11

FRAME 1 OF 3

LIST OF FITTINGS

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
		~~4~~	~~AS-500~~	~~1~~	~~10"~~	~~810~~	~~620~~	~~80~~	~~.594~~	~~B16.9~~	~~SEAMLESS STL.~~	~~A234 GR. WPB~~	~~90° ELBOW L.R. BUTT WELD~~	AUX. STEAM SYSTEM	NOS. 90-93	TUBE TURN PT. ~~#801~~
			AS-501		4"	810	620	80	.337	B16.9	SEAMLESS STL.	A234 GR. WPB	90° ELBOW L.R. BUTT WELD			#2
		3	AS-502	15	3"				.300							#2
		3	AS-503	16	2½"				.276							#2
		3	AS-504	3	4×3"				.337×.300				90° REDUCING ELBOW L.R.			#2R
		4	AS-505	7	4"	125	411	40	.237				90° ELBOW L.R.			#1
			AS-506	3	3"	125			.216							#1
			AS-507	24	2½"	150			.203							#1
			AS-508	1	5×4"	125			.258×.237				90° REDUCING ELBOW L.R.			#1-R
			AS-509	1	4×3"				.237×.216							#1-R
			AS-510	2	3×2"				.216×.154							#1-R
		~~4~~	~~AS-511~~	~~1~~	~~10"~~	~~810~~	~~620~~	~~80~~	~~.594~~				~~TEE~~			~~#820~~
			AS-512	3	4"	810	620	80	.337				TEE			#21
			AS-513	3	3"				.300							#21
			AS-514	1	2½"				.276							#21
			AS-515	2	3×3×2½"				.300×.276				REDUCING TEE			#23
			AS-516	1	3×3×2"				.300×.218							#23
			AS-517	4	2½"	150	411	40	.203				TEE			#20
		3	AS-518	3	2½×2½×2"			40	.203×.154				REDUCING TEE			#22
			AS-519	2	2½×2½×1½"				.203×.145							#22
		4,5	AS-520	1	10×6"	810	620	80	.594×.432				CONC. REDUCER			#890
		4,5	AS-521	1	6×3½"				.432×.276							#91
			AS-522	2	4×3"	810	620	80	.337×.300				CONC. REDUCER			#91
			AS-523	1	4×2"				.337×.218							#91
			AS-524	1	3×2½"				.300×.276							#91
			AS-525	3	2½×2"				.276×.218							#91
			AS-526	1	2½×2"	150	411	40	.203×.154							#90
			AS-527	1	2½×1"				.203×.133							#90
		2,3	AS-528	4	4"	810	620	80	.337				45° ELBOW-L.R.			#6
			AS-529	3	3"				.276							#6
			AS-530	1	3"			600#		B16.5(1968)	CAST STEEL	A216 GR. WCB	FLGD. STRAINER, Y-TYPE W/ [illegible], F.F.D.		NOS. #165, 190, 90-93	MUELLER FIG. NO. 764
			AS-531	2	2"								SOCK WELD STRAINER Y-TYPE W/ [illegible]		174, 90-93	FIG. NO. 862
		1	AS-532	3	1½"	150	411									862
			AS-533	1	¾"											862
		3,4	AS-534	48	2"	810	620	3000#		B16.11	FORGED STEEL	A105	90° ELBOW - SOCK. WELD		NOS. 90-93	BONNEY FORGE
			AS-535	30	1½"	150	411									
			AS-536	3	1¼"											
			AS-537	19	1"											
		4	AS-538	21	¾"											
			AS-539	3	½"											
		4	AS-540	16	2"	810	620						TEE			
		3	AS-541	4	1½"	150	411									
			AS-542	1	1¼"											
		3,4	AS-543	7	1"											
		7	AS-544	6	¾"											
		4	AS-545	2	2×¾"								REDUCING COUPLING - SOCK WELD			
		8	AS-546	2	1½×1"											
		3,4	AS-547	5	2×1½"								INSERT		NOS. 90-93(174)	
			AS-548	1	2×1¼"											
			AS-549	1	1½×1"											
			AS-550	2									SOCKOLET I.P.S. RUN AND OUTLET		NOS. 90-93(171)	
			AS-551	1												
		3	AS-552	22	2½×1"											
			AS-553	2												
		4	AS-554	4	2×1"											
			AS-555	1												
			AS-556	1	1½×1"											
			AS-557	1												
			AS-558	1	1¼×1"											
		3	AS-559	7	2½-1½×½								THREDOLET - I.P.S. RUN AND OUTLET			
			AS-560	1												
			AS-561	6	1"			80					SCRD. BOSS FOR EX. HVY. PIPE		(170)	BETH. STD. EF-358 FIG. 9
		3	AS-562	7	½"								SOCKET WELD BOSS FOR EX. HVY. PIPE			FIG. 8
		3	AS-563	7	10"	810	620					SAE 1020	TYPE 'A' CHILL RING SCH. 80 PIPE			FIG. [illegible]
		3	AS-564	5	10"								'B'			
		2,3	AS-565	22	4"								'A'			
		3	AS-566	19	4"								'B'			
		3	AS-567	18	3"								'A'			
		3	AS-568	45	3"								'B'			
		3	AS-569	18	2½"								'A'			
		3	AS-570	34	2½"								'B'			
		3	AS-571-A	6	2"								'A'			
		3	AS-571-B	5	2"								'B'			
		3	AS-572	4	4"	150	411						'A' SCH. 40 PIPE			
		2,3	AS-573	10	4"								'B'			
		3	AS-574	7	3"								'A'			
		3	AS-575	7	3"								'B'			
		3,4	AS-576	40	2½"								'A'			
		3,4	AS-577	40	2½"								'B'			
		3	AS-578	6	2"								'A'			
		3	AS-579	8	2"								'B'			
		3	AS-580	4	1½"								'B'			
		3	AS-581	2	2"						STEEL		WELDING RING - RIDGE TYPE			TUBE TURN PT. #96R
			AS-582	10	1"						NIPPLE - STEEL FLANGE FOR STL.	[illegible]	FLGD. ADAPTER DET. 'A' [illegible]	W/CAP CHAIN		BETH. STD. EF-345
		1	AS-583	1	1¼"			150#			STAINLESS STL.	TYPE 304	ORIFICE PL - ⅛" THK. W/ ⅜" HOLE		Nº 90-93	BS-2-UF-TYPE 'A'
		1	AS-584	5	2×2×1½"			3000#		B16.11	FORGED STEEL	A105	REDUCING TEE SOCK. WELD			BONNEY FORGE
		1	AS-585	5	2×1½×1½"											
		1	AS-586	1	1½×1¼×1¼"											
		1	AS-587	1	1¼×1×1¼"											
		1,3	AS-588	3	1½×1¼								ELBOW 90°			
		2	AS-589	2	4"			40	.237	B16.9	SEAMLESS STL.	A234 GR. WPB	45° ELBOW BUTT WELD			TUBE TURN PT. #5
		2	AS-590	1	4"			40	.237	B16.9			TEE			#20
		2	AS-591	2	4×¾"			3000#			FORGED ST'L.	A105	THREADOLET - I.P.S. RUN & OUTLET		(170)	BONNEY FORGE
		2	AS-592	1	4×2"			40	.237/.154	B16.9	SEAMLESS STL.	A234 GR. WPB	90° REDUCING ELBOW B.W.			TUBE TURN PT. # 1R
		2	AS-593	1	1"						STEEL	[illegible]	BHD. PENETRA. SLEEVE			EF-496 FIG. 2
		3	AS-594	1	1½"											
		2	AS-595	1	1½×1½×1"	150	411	3000#		B16.11	FORGED STL.	A-105	REDUCING TEE, SOC. WELD		NOS. 90-93	BONNEY FORGE
		2	AS-596	1	1½×1½×¾"											
		2,8	AS-597	2	2"								45° ELBOW			
		2	AS-598	2	2½"			40		B16.9	SMLS. STL.	A234 GR. WPB	45° ELBOW - L.R. BUTT WELD			TUBE TURN PT. #5
		2	AS-599	1	1½×1"			3000#			FORGED STL.	A-105	REDUCING INSERT - SOC. WELD			BONNEY FORGE
		2	AS-600	1	½"					B16.11			45° ELBOW SOC. WELD			
		2,3	AS-601	3	1½×½"								S.W. ELBOLET IPS RUN & OUTLET		(173)	
		2	AS-602	1	2½×½"								SOCKOLET IPS RUN & OUTLET		(171)	
		2	AS-603	1	2½×½"								THREADOLET		(170)	
		3,4	AS-604	4	¾"	810	620	80			FORGED STL.	A105	SCRD. BOSS FOR EX. HVY. PIPE	AUX. STEAM SYSTEM	NOS. 90-93	EF-358 FIG. 9
		3	AS-605	1	[illegible]	150	411	40	.203×.154	B16.9	SEAMLESS STL.	A234 GR. WPB	BUTTWELD REDUCING CROSS			TUBE TURN PT. #82A
		3,4	AS-606	3	2½×½"			3000#			FORGED STL.	A-105	THREDOLET I.P.S. RUN & OUTLET		(170)	BONNEY FORGE
		3,4	AS-607	4	1×¾"			3000#					REDUCING INSERT BUSHING - SOCK. WELD			
		3	AS-608	2	½"	210	620	600#			STAINLESS STL.	TYPE 304	ORIFICE PLATE - ⅛" THK. W/ 1/16" DIA. HOLE			BS-2-UF - TYPE "A"

EF-529
PLAN NO.

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
7	8-2-78		1. INCREASED QUANTITY; AS-544 FROM 4 TO 6. 2. ADDED FITTINGS AS-635 THRU AS-638.	G.G.K.	8-7-78
8	10-4-78 1-8-78 1-9-79		1-ITEM AS-597 INCR. FROM 1 TO 2 PER Y.I.S. M-4650-22-283 2. ADDED AS-639 3 AS-546 QTY 2 WAS 1	P.G. G.L.W. E.J.K.	2-6-79

UAO-50131

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L.

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4-7-77		1-CHG QTY OF PC# AS-532 (1 TO 3). 2-ADDED PC# AS-583 THRU AS-588. 3 MADE NOTE #130 APPLICABLE TO AS-530.	R.J.L.	5-13-77
2	7-21-77		1-INCR THE QTY OF ITEMS AS-528 (1-2), AS-565 (4-6), AS-573 (2-8). 2-ADDED ITEM NOS. AS-589 TO AS-603	P.C.G.	9-8-77
3	10/26/77	ALL	1-ADDED FITTING Nº. AS-594 AND AS-604 THRU AS-617. 2-FITTING Nº. AS-562 CHANGE SIZE FROM ¼" SCREWED BOSS TO ½" SOCKET WELDING BOSS. 3-INCREASED THE AMT. REQ'D. OF THE FOLLOWING FITTING'S. Nº AS-502 FROM 7 TO 15 AS-503 " 12 " 16 AS-504 " 2 " 3 AS-518 " 2 " 3 AS-525 " 1 " 3 AS-528 " 2 " 4 AS-534 " 13 " 40 AS-541 " 3 " 4 AS-543 " 2 " 3 AS-547 " 1 " 3 AS-552 " 1 " 2 AS-565 " 6 " 22 AS-565 " 10 " 19 AS-566 " 6 " 18 AS-567 " 8 " 45 AS-568 " 10 " 18 AS-569 " 10 " 34 AS-570 " 2 " 5 AS-571-B " 2 " 3 AS-588 " 2 " 3 AS-601 " 1 " 3 4-FITT. Nº. AS-559 CHANGE FROM 2½-1¼×½ TO 2½-1½×½. 5-INCREASED THE AMT. REQ'D. OF THE FOLLOWING FITTING'S. Nº AS-563 FROM 5 TO 7 AS-564 " 3 " 5 AS-571-A " 4 " 6 AS-572 " 2 " 4 AS-573 " 5 " 10 AS-574 " 5 " 7 AS-575 " 5 " 7 AS-576 " 15 " 20 AS-577 " 12 " 15 AS-578 " 4 " 6 AS-579 " 6 " 8 AS-580 " 2 " 4 AS-581 " 1 " 2 AND REVISED DESC. FROM CHILL RING TO WELDING RING TO SUIT AVAIL.	F.J.D.	11-18-77
4	2-2-78		1. DELETED AS-500, AS-511, AS-520 & AS-521. AS INDICATED ON Y.I.S. 4650-22-78. 2. ADDED AS-618 THRU AS-630. 3. REVISED THE QTY. FOR: AS-534 (40-48), AS-538 (12-21), AS-540 (14-16), AS-543 (3-7), AS-545 (1-2), AS-547 (3-5), AS-554 (1-4), AS-576 (20-40), AS-577 (15-40), AS-604 (3-4), AS-606 (2-3), AS-607 (2-4).	R.H.M.	2-9-78
5	3-28-78		1. REINSTATED AS-520 & AS-521. 2. ADDED AS-631. (Y.I.S. 4650-22-90)	R.H.M.	3-31-78
6	4-28-78		1. ADDED FITTINGS AS-632 THRU AS-634 CONT'D. ABOVE	L.P.K.	5-8-78

HULL	DESIGN	CHARGE
8451	27,340 DWT CONTAINERSHIP	10-8450
8450		10-8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 13 DEC 1976
DRAWN G.L. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED J.E.H.
APPROVED

PLAN NO. M-4650-371-09-11
ALT. NO. 8

FITTING LIST FOR AUXILARY STEAM SYSTEM

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	10-12-77				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

M-714

		DATE OF ISSUE
	ALTERATION	
	ENGINEERING DISTRIBUTION	
MAIL	OWNERS	
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S. NAVY	
	U.S.C.G.	
	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
OFFICE	HULL DRAFT. - 21	
	MACH. DRAFT. - 22	
	ELEC. DRAFT. - 23	
	OUTFIT DRAFT. - 25	
	ESTIMATING	
	J. DOUGHERTY (CTD)	
MISC.	PRODUCTION (BCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	WILLIEDS PLUMBING	
	TOTAL ENG'R. DIST.	
	YARD DISTRIBUTION	
YARD	UAO-AFFAIRS	
	J. SIMMONS	
	PIECE RATE - 11	
	TEST DEPARTMENT	
	VISUAL PLANNING	
STRUCTURAL	GROUND ASSEMBLY	
	35 DEPT.	
	H. LEVY	
	E. McNAIR	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL - 45	
	WET DOCK	
MACH'Y & OUTFIT	PIPE SHOP - 52	
	OUTFIT #1 PIER	
	PIPE DRAFT. - 52	
	BOILER SHOP - 58	
	OUTSIDE MACH. - 60	
	ELECTRIC SHOP - 70	
	SHEET MET. SHOP - 74	
	COPPER SHOP - 51	
	PAINT SHOP - 75	
OTHER	WELDING	
	MOLD LOFT - 41	
	BRACKET SHOP	
	TOTAL YARD DIST.	

SQ. FT.

M-4650-371-09-11

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-11

FRAME 2 OF 3

LIST OF FITTINGS

SCH NO.	ANSI DIM STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG OR FIG. NO. OR EQUAL
3000#	B16.11	FORGED STEEL	A-105	SOCKET WELDING TEE	AUX. STEAM SYSTEM	NOS. 90-93	BONNEY FORGE
				SCREWED CAP			
				SCREWED 90° ELBOW			
150#		CAST STEEL	A-216	FLANGED STEAM SEPARATOR			WRIGHT AUSTIN TYPE "T"
80	B16.9	SEAMLESS STEEL	A-234 GR.WPB	WELDING CROSS - BUTT WELD		NOS. #90-#93	TUBE TURN PT.#83
				CONCENTRIC REDUCER BUTT WELD			PT.#91
3000#	B16.11	FORGED STEEL	A-105	SOCKET WELDING TEE			BONNEY FORGE
				SOCKOLET I.P.S. RUN & OUTLET			
				SCREWED REDUCING BUSHING			
		STEEL		STUFFING BOX FOR PIPE			BETH STD EF-365
3000#	B16.11	FORGED STL.	A105	SCR'D COUPLING		NOS. 90-93	BONNEY FORGE
				¾" FEM NPT x ¾" FEM NPSM UNION			ANCHOR #12M-12UFS
				¾" FEM NPT x ¾" MALE NPT RED ADAPTER			CAJON #12-RA-8
		STAINLESS STL.		CORRUGATED HOSE			ANACONDA #LW21-1
3000#	B16.11	FORGED STL.	A105	S.W. REDUCING INSERT		NOS. 90-93	BONNEY FORGE
				TEE			
				TEE			
				REDUCING TEE S.W.			
				FILTER - VENDOR FURNISH			VENDOR FURNISH
150#				STEAM TRAP SCR'D ENDS	DRAIN FROM DEHUM. UNIT-HTG COILS	NOS. 90-93, 175, 187	SARCO TD-50
				STRAINER "Y" TYPE S.W.		NOS. 174, 90-93	MUELLER FIG #362
				CHILL RING TYPE "A" SCH 80			BETH STD EF-358
		STEEL	A36 STEEL	2x2x¼" ANGLE (CUT TO SUIT)			
				2x¼" FLAT BAR			
3000#		FORGED STEEL	A-105	SCREWED REDUCING BUSHING		NOS. 90-93	BONNEY FORGED
				SCR'D BOSS FOR EX. HVY PIPE			BETH STD EF358
				REDUCING INSERT SOCK WELD		NOS. 90-93	BONNEY FORGE
				REDUCING INSERT SOCK WELD			
				REDUCING ELBOW 90° S.W.			
				SOCK WELD			

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1, UNIT 2, UNIT 3, UNIT 4, UNIT, UNIT 6, UNIT #7, UNIT #8, UNIT, UNIT, UNIT, UNIT, UNIT #13, UNIT 14, UNIT 15, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT, UNIT

LIST

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL
502202	REFER 78(3)			4	AS-500	1	10"	810	620	80	.594	B16.9	SEAMLESS STL
SUPPLY					AS-501	8	4"	810	620	80	.337	B16.9	SEAMLESS STL
				3	AS-502	15	3"				.300		
				3	AS-503	16	2½"				.276		
502202	502202-B			3	AS-504	3	4"x3"				.337x.300		
SUPPLY				4	AS-505	7	4"	125	411	40	.237		
				4	AS-506	3	3"	125			.216		
					AS-507	24	2½"	150			.203		
502202				4	AS-508	1	5"x4"	125			.258x.237		
				4	AS-509	1	4"x3"				.237x.216		
				4	AS-510	2	3"x2"				.216x.154		
	REFER 78(3)			4	AS-511	1	10"	810	620	80	.594		
					AS-512	1	4"	810	620	80	.337		
					AS-513	3	3"				.300		
					AS-514	1	2½"				.276		
					AS-515	2	3"x3"x2½"				.300x.276		
					AS-516	2	3"x3"x2"				.300x.218		
					AS-517	4	2½"	150	411	40	.203		
	502202-B			3	AS-518	3	2½"x2½"x2"			40	.203x.154		
					AS-519	2	2½"x2½"x1½"				.203x.145		
	REFER 78(3)	502202-C		4,5	AS-520	1	10"x6"	810	620	80	.594x.432		
	REFER 78(3)	502202-C		4,5	AS-521	1	6"x2½"				.432x.276		
					AS-522	2	4"x3"	810	620	80	.337x.300		
					AS-523	1	4"x2"				.337x.218		
					AS-524	1	3"x2½"				.300x.276		
	502202-B			3	AS-525	3	2½"x2"				.276x.218		
					AS-526	2	2½"x2"	150	411	40	.203x.154		
					AS-527	1	2½"x1"				.203x.133		
502202-1X	502202-A	502202-B		2,3	AS-528	4	4"	810	620	80	.337		
502202					AS-529	3	2½"				.276		
502208					AS-530	1	3"			600#	—	B16.5(FLGS)	CAST STEEL
					AS-531	2	2"				—	—	
502208	(4)502208-A			1	AS-532	3	1½"	150	411		—	—	
502208					AS-533	1	¾"				—	—	
502203-B	502203-E	[illegible]		3,4	AS-534	48	2"	810	620	3000#	—	B16.11	FORGED STEEL
					AS-535	30	1½"	150	411		—		
					AS-536	5	1¼"				—		
					AS-537	17	1"				—		
	(4)502203-G			4	AS-538	21	¾"				—		
					AS-539	5	½"				—		
	(4)502203-G			4	AS-540	16	2"	810	620		—		
	502203-E			3	AS-541	4	1½"	150	411		—		
					AS-542	1	1¼"				—		
	502203-E	(4)502203-G		3,4	AS-543	7	1"				—		
	502203-J			7	AS-544	6	¾"				—		
502203	(4)502203-G			4	AS-545	2	2"x¾"				—		
	502208-M			8	AS-546	2	1½"x1"				—		
502203-B	502203-E	(4)502203-G		3,4	AS-547	5	2"x1½"				—		
502203					AS-548	1	2"x1¼"				—		
502203-B					AS-549	1	1¼"x1"				—		
502205					AS-550	2	2½"x1½"				—		
					AS-551	1	2½"x1¼"				—		
	502205-B			3	AS-552	2	2½"x1"				—		
					AS-553	2	2½"x2"x¾"				—		
	(4)502205-C			4	AS-554	4	2"x1"				—		
					AS-555	1	2"x¾"				—		
					AS-556	1	1½"x1"				—		
					AS-557	1	1½"x¾"				—		
					AS-558	1	1¼"x1"				—		
502205-B				3	AS-559	7	2½"x1½"x½"				—		
502205					AS-560	1	¾"x½"				—		
UAO					AS-561	6	1"			80	—		
				3	AS-562	7	½"				—		
502211	502211-C			3	AS-563	7	10"	810	620	—	—		
				3	AS-564	3	10"			—	—		
	502211-B	502211-C		2,3	AS-565	22	4"			—	—		
	502211-C			3	AS-566	19	4"			—	—		
				3	AS-567	18	3"			—	—		
				3	AS-568	45	3"			—	—		
				3	AS-569	18	2½"			—	—		
				3	AS-570	34	2½"			—	—		
				3	AS-571A	6	2"			—	—		
				3	AS-571B	5	2"			—	—		
				3	AS-572	4	4"	150	411	—	—		
	502211-B			2,3	AS-573	10	4"			—	—		
	502211-C			3	AS-574	7	3"			—	—		
				3	AS-575	7	3"			—	—		
		502211-D		34	AS-576	40	2½"			—	—		
		502211-D		34	AS-577	40	2½"			—	—		
				3	AS-578	6	2"			—	—		
				3	AS-579	8	2"			—	—		
				3	AS-580	4	1½"			—	—		
				3	AS-581	2	1"			—	—		STEEL
UAO					AS-582	10	1"			—	—	—	NIPPLE: STEEL FLANGE: FOR STL
				1	AS-583	1	1¼"			150#	—	—	STAINLESS STL
502203-C				1	AS-584	5	2"x2"x1½"			3000#	—	B16.11	FORGED STEEL
				1	AS-585	5	2"x1½"x1½"				—		
				1	AS-586	1	[illegible]				—		
				1	AS-587	1	[illegible]				—		
	502203-E			1,3	AS-588	3	1½"x1¼"						
502202-A				2	AS-589	2	4"			40	.237	B16.9	SEAMLESS STL.
				2	AS-590	1	4"			40	.237	B16.9	
502205-A				2	AS-591	2	4"x½"			3000#	—	—	FORGED ST'L.
502202-A				2	AS-592	1	4"x2"			40	.237x.154	B16.9	SEAMLESS ST'L.
UAO				2	AS-593	1	1"			—	—	—	STEEL
				3	AS-594	1	1½"			—	—	—	
502203-D				2	AS-595	1	1½"x1"x1"	150	411	3000#	—	B16.11	FORGED STL
				2	AS-596	1	1½"x1"x2"				—		
	SUPPLY			2,8	AS-597	2	2"						
502202-A				2	AS-598	2	2½"			40		B16.9	SMLS STL.
502203-D				2	AS-599	1	1½"x1"			3000#		—	FORGED STL.
				2	AS-600	1	½"					B16.11	
502205-A	502205-B			2,3	AS-601	3	2½"x½"					—	
				2	AS-602	1	2½"x¾"					—	
				2	AS-603	1	2½"x¾"					—	
UAO				34	AS-604	4	⅜"	810	620	80		—	FORGED STL
502202-B				3	AS-605	1	2½"x2½"x2"	150	411	40	.203x.154	B16.9	SEAMLESS STL.
502205-B	(4)502205-G			34	AS-606	3	2½"x½"			3000#	—	—	FORGED STL.
502203-E	(4)502203-G			34	AS-607	4	1"x¾"			3000#	—	—	
				3	AS-608	2	½"	210	620	600#	—	—	STAINLESS STL.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-11

FRAME 3 OF 3

LIST OF FITTINGS

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 6	UNIT #7	UNIT #8	UNIT #13	REQUISITION NO	CODE NO. (FUTURE USE)	ALT. NO	FITTING IDENT. NO	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL	ASTM SPEC.	DESCRIPTION	
		2		SUPPLY		3	AS-609	2	½"	810	620	3000#		B16.11	FORGED STEEL	A-234	SOCKET WELDING TEE	AUX. STEAM SYSTEM
		1		502203-E		3	AS-610	1	½"								SCREWED CAP	
		3		SUPPLY		3	AS-611	3	⅜"	↓	↓	↓		↓	↓	↓	SCREWED 90° ELBOW	
			1	502213		3	AS-612	1	1½"			150#			CAST STEEL	A-216	FLANGED STEAM SEPARATOR	
	2			502202-B		3	AS-613	2	3½"x3½"x3½"x3½"	810	620	80	.300	B16.9	SEAMLESS STEEL	A234 GR.WPB	WELDING CROSS - BUTT WELD	
	1			↓		3	AS-614	1	3"x2"			↓	.300x.216	↓	↓	↓	CONCENTRIC REDUCER BUTT WELD	
	2			502203-E		3	AS-615	2	2"			3000#	—	B16.11	FORGED STEEL	A-105	SOCKET WELDING TEE	
				502205-B		3	AS-616	1	10"x3	↓	↓	↓	—	—			SOCKOLET I.P.S. RUN & OUTLET	
				502203-E		3	AS-617	6	1"x¾"	150	411	3000#	—	—	↓	↓	SCREWED REDUCING BUSHING	↓
			3	VAO		4	AS-618	3	1½"			—	—	—	STEEL	A53 [illegible] GR.B	STUFFING BOX FOR PIPE (9" LG)	
	6	6		SUPPLY		4	AS-619	12	¾"			3000#	—	B16.11	FORGED STL.	A105	SCRD. COUPLING	
	3	3		502203-G		4	AS-620	6	¾"					—			¾" MALE NPT x ¾" FEM NPSM UNION	
	3	3		502203-G		4	AS-621	6	¾"x½"			↓		—	↓	↓	¾" FEM NPT x ½" MALE NPT RED. ADAPTER	
	3	3		50001		4	AS-622	6	¾"			—		—	STAINLESS STL.		CORRUGATED HOSE	
	2	2		502203-G		4	AS-623	4	1½"x¾"			3000#		B16.11	FORGED STL.	A234	S.W. REDUCING INSERT	
	1	1		502203-G		4	AS-624	2	1½"x1½"x¾"								TEE	
1						4	AS-625	1	1½"x1½"x¾"									
	3	3				4	AS-626	6	¾"x¾"x½"								TEE	
	1			↓		4	AS-627	1	2"x2"x¾"	↓	↓	↓		↓	↓	↓	REDUCING TEE S.W.	
	1			500047		4	AS-628	1	¾"	—	—	—					FILTER - VENDOR FURNISH	
	1			502210		4	AS-629	1	1"			150#		—	STN. STL.	A276 TY 316	STEAM TRAP SCRD ENDS	DRAIN FROM DEHU
	1			502208-B		4	AS-630	1	1"			600#		—	CAST STL.	A216 GR.WCB	STRAINER "Y" TYPE S.W. [illegible]	↓
	1			502211-E		5	AS-631	1	6"	810	620	—	—	—	—	SAE 1020	CHILL RING TYPE "A" SCH 80	
	19'-0"			VAO		6	AS-632	19'-0"	—	—	—	—	—	—	STEEL	A.B.S. STEEL	3"x3"x5/16" ANGLE (CUT TO SUIT)	
	6'-0"			↓		6	AS-633	6'-0	—	—	—	—	—	—	↓	↓	3"x¼" FLAT BAR	
	1			502203-H		6	AS-634	1	½"x⅜"	150	411	3000#	—	B16.11	FORGED STEEL	A-105	SCREWED REDUCING BUSHING	
	1	1		VAO		7	AS-635	2	¼"	810	620	—	—	B2.1			SCRD. BOSS FOR EX. HVY. PIPE	
	1	1		SUPPLY		7	AS-636	2	¾"x½"	150	411	3000#	-	B16.11			REDUCING INSERT SOCK. WELD	
	1	1		↓		7	AS-637	2	2"x¾"				-				REDUCING INSERT SOCK. WELD	
	3	3		502203-J		7	AS-638	6	¾"x½"				-				REDUCING ELBOW 90° S.W.	
	2	2		502203-M		8	AS-639	4	1"x¾"	↓	↓	↓	—	↓	↓	↓	COUPLING - SOCK. WELD	

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NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-11

FRAME 1 OF 3

LIST OF FITTINGS

ALT NO.	FITTING IDENT. NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG.OR FIG.NO. OR EQUAL
4	AS-500	[illegible]	10"	810	620	80	.594	B16.9	SEAMLESS STEEL	A234 GR WPB	90° ELBOW L.R. BUTT WELD	AUX. STEAM SYSTEM	NOS. 90-93	TUBE TURN PT. #801
	AS-501	6	4"	810	620	80	.337	B16.9	SEAMLESS STL.	A234 GR WPB	90° ELBOW L.R. BUTT WELD			#2
3	AS-502	15	3"				.300							#2
3	AS-503	16	2½"				.276							#2
3	AS-504	3	4"x3"				.337x.300				90° REDUCING ELBOW L.R.			#2R
4	AS-505	7	4"	125	411	40	.237				90° ELBOW L.R.			#1
4	AS-506	3	3"	125			.216							#1
	AS-507	24	2½"	150			.203							#1
4	AS-508	1	5"x4"	125			.258x.237				90° REDUCING ELBOW L.R.			#1-R
4	AS-509	1	4"x3"				.237x.216							#1-R
4	AS-510	1	3"x2"				.216x.154							#1R
4	AS-511	1	10"	810	620	80	.594				TEE			#820
	AS-512	1	4"	810	620	80	.337				TEE			#21
	AS-513	[illegible]	3"				.300							#21
	AS-514	1	2½"				.276							#21
	AS-515	2	3x3x2½"				.300x.276				REDUCING TEE			#23
	AS-516	1	3x3x2"				.300x.218							#23
	AS-517	4	2½"	150	411	40	.203				TEE			#20
3	AS-518	3	2½x2½x1½			40	.203x.154				REDUCING TEE			#22
	AS-519	2	2½x2½x1¼				.203x.145							#22
4,5	AS-520	1	10"x6"	810	620	80	.594x.432				CONC. REDUCER			#890
4,5	AS-521	1	6"x2½"				.432x.276							#91
	AS-522	2	4"x3"	810	620	80	.337x.300				CONC. REDUCER			#91
	AS-523	1	4"x2"				.337x.218							#91
	AS-524	1	3"x2"				.300x.216							#91
3	AS-525	3	2½"x2"				.276x.218							#91
	AS-526	2	2½"x1½"	150	411	40	.203x.154							#90
	AS-527	1	2½"x1"				.203x.133							#90
2,3	AS-528	4	4"	810	620	80	.337				45° ELBOW-L.R.			#6
	AS-529	3	2½"				.276							#6
	AS-530	1	3"			600#	—	B16.5(FLGS)	CAST STEEL	A216 GR WCB	FLGD. STRAINER, Y-TYPE W/ MONEL SCREEN F.I.D.		NOS. 165, 190, 90-93	MUELLER FIG NO. 764
	AS-531	2	2"				—				SOCK WELD STRAINER Y-TYPE W/ MONEL SCREEN		174, 90-93	FIG NO. 862
1	AS-532	3	1½"	150	411		—							862
	AS-533	1	¾"				—							862
3,4	AS-534	48	2"	810	620	3000#	—	B16.11	FORGED STEEL	A105	90° ELBOW - SOCK.WELD		NOS. 90-93	BONNEY FORGE
	AS-535	50	1½"	150	411		—							
	AS-536	3	1¼"				—							
	AS-537	17	1"				—							
4	AS-538	21	¾"				—							
	AS-539	5	½"				—							
4	AS-540	16	2"	810	620		—				TEE			
3	AS-541	4	1½"	150	411		—							
	AS-542	1	1¼"				—							
3,4	AS-543	7	1"				—							
7	AS-544	6	¾"				—							
4	AS-545	2	2"x1½"				—				REDUCING COUPLING - SOCK WELD			
8	AS-546	2	1½"x1"				—							
3,4	AS-547	5	2"x1½"				—				INSERT			
	AS-548	1	2"x1¼"				—							
	AS-549	1	1½"x1"				—							
	AS-550	2	[illegible]				—				SOCKOLET - I.P.S. RUN AND OUTLET		NOS. 90-93, 171	
	AS-551	1	[illegible]				—							
3	AS-552	2	2½"x1"				—							
	AS-553	2	[illegible]				—							
4	AS-554	4	2"x1"				—							
	AS-555	1	2"x¾"				—							
	AS-556	1	1½"x1"				—							
	AS-557	1	1½"x¾"				—							
	AS-558	1	1¼"x1"				—							
3	AS-559	7	2½"-1½"x½"				—				THREDOLET - I.P.S. RUN AND OUTLET		170	
	AS-560	1	¾"x½"				—							
	AS-561	6	¼"			80	—				SCRD. BOSS FOR EX.HVY. PIPE			BETH. STD. EF-558 FIG. 9
3	AS-562	7	½"				—				SOCKET WELD BOSS FOR EX.HVY. PIPE			FIG. 5
3	AS-563	7	10"	810	620		—			SAE 1020	TYPE 'A' CHILL RING SCH. 80 PIPE			FIG. 8
3	AS-564	5	10"				—				'B'			
2,3	AS-565	22	4"				—				'A'			
3	AS-566	19	4"				—				'B'			
3	AS-567	18	3"				—				'A'			
3	AS-568	45	3"				—				'B'			
3	AS-569	18	2½"				—				'A'			
3	AS-570	34	2½"				—				'B'			
3	AS-571A	6	2"				—				'A'			
3	AS-571B	5	2"				—				'B'			
3	AS-572	4	4"	150	411		—				'A' SCH. 40 PIPE			
2,3	AS-573	10	4"				—				'B'			
3	AS-574	7	3"				—				'A'			
3	AS-575	7	3"				—				'B'			
3,4	AS-576	40	2½"				—				'A'			
3,4	AS-577	40	2½"				—				'B'			
3	AS-578	6	2"				—				'A'			
3	AS-579	8	2"				—				'B'			
3	AS-580	4	1½"				—				'B'			
3	AS-581	2	1"				—		STEEL		WELDING RING - RIDGE TYPE			TUBE TURN PT. #96R
	AS-582	10	1"				—		NIPPLE - STEEL, FLANGE FORGED STL.	[illegible]	FLGD. ADAPTER [illegible]		W/CAP CHAIN	BETH. STD. EF-345
1	AS-583	1	1¼"			150#	—	—	STAINLESS STL.	TYPE 304	ORIFICE PL. - 1/8" THK W/ 3/8" HOLE		N° 90-93	BS-2-UF-TYPE 'A'
1	AS-584	5	2x2x1½			3000#	—	B16.11	FORGED STEEL	A105	REDUCING TEE SOCK. WELD			BONNEY FORGE
1	AS-585	5	2x1½x1½				—							
1	AS-586	1	1½x1¼x1¼				—							
1	AS-587	1	1¼x¾x¾				—							
1,3	AS-588	3	1½x1¼								ELBOW 90°			
2	AS-589	2	4"			40	.237	B16.9	SEAMLESS STL.	A234 GR WPB	45° ELBOW BUTT WELD			TUBE TURN PT #5
2	AS-590	1	4"			40	.237	B16.9			TEE			#20
2	AS-591	8	4"x¾"			3000#	—	—	FORGED ST'L.	A105	THREADOLET - I.P.S. RUN & OUTLET		#170	BONNEY FORGE
2	AS-592	1	4"x2"			40	.237x.154	B16.9	SEAMLESS STL.	A234 GR WPB	90° REDUCING ELBOW B.W.			TUBE TURN PT # 1R
2	AS-593	1	1"			—	—	—	STEEL	[illegible]	BHD. PENETRA. SLEEVE			EF-496 FIG 2
3	AS-594	1	1½"			—	—	—						
2	AS-595	1	1½x1x1	150	411	3000#	—	B16.11	FORGED STL.	A-105	REDUCING TEE, SOC. WELD		NOS. 90-93	BONNEY FORGE
2	AS-596	1	1½x1½x1											
2,8	AS-597	2	2"								45° ELBOW			
2	AS-598	2	2½"			40		B16.9	SMLS STL.	A234 GR WPB	45° ELBOW - L.R. BUTT WELD			TUBE TURN PT #5
2	AS-599	1	1½x1"			3000#			FORGED STL.	A-105	REDUCING INSERT, SOC. WELD			BONNEY FORGE
2	AS-600	1	½"					B16.11			45° ELBOW SOC. WELD			
2,3	AS-601	3	1½x½					—			S.W. ELBOLET IPS RUN & OUTLET		#173	
2	AS-602	1	1½x½					—			SOCKOLET IPS RUN & OUTLET		#171	
2	AS-603	1	2½x¼					—			THREADOLET		#170	
3,4	AS-604	4	¼"	810	620	80		—	FORGED STL.	A105	SCRD. BOSS FOR EX.HVY. PIPE	AUX STEAM SYSTEM	NOS. 90-93	EF-558 FIG. 9
3	AS-605	1	[illegible]	150	411	40	.203x.154	B16.9	SEAMLESS STL.	A234 GR.WPB	BUTTWELD REDUCING CROSS			TUBE TURN PT. #82A
3,4	AS-606	3	2½x½			3000#	—	—	FORGED STL.	A-105	THREDOLET I.P.S. RUN & OUTLET		#170	BONNEY FORGE
3,4	AS-607	4	1"x¾			3000#	—	—			REDUCING INSERT BUSHING - SOCK. WELD			
3	AS-608	2	½"	210	620	600#	—	—	STAINLESS STL.	TYPE 304	ORIFICE PLATE - 1/8" THK. W/ 1/16" DIA. HOLE			BS-2-UF-TYPE "A"

NO	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
7	8-2-78		1. INCREASED QUANTITY; AS-544 FROM 4 TO 6. 2. ADDED FITTINGS AS-635 THRU AS-638.	G.G.K.	8/7/78
8	10-4-78 11-8-78 1-30-79		1-ITEM AS-597 INCR. FROM 1 TO 2 PER Y.I.S. M-4650-22-283 2. ADDED AS-639 3. AS-546 QTY 2 WAS 1	P.G. G.L.W. E.J.K.	2/6/79

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	4/7/77		1-CHG QTY OF FC # AS-532 (1 TO 3). 2-ADDED FC # AS-583 THRU AS-588 3. MADE NOTE #190 APPLICABLE TO AS-530.	R.J.L.	
2	7-21-77		1-INCR. THE QTY OF ITEMS AS-528 (1-2), AS-565 (4-6), AS-573 (2-8). 2-ADDED ITEM NOS AS-589 TO AS-603	P.C.G.	
3	10/26/77	ALL	1-ADDED FITTING No. AS-594 AND AS-604 THRU AS-617. 2-FITTING No. AS-562 CHANGE SIZE FROM ¼" SCREWED BOSS TO ½" SOCKET WELDING BOSS. 3-INCREASED THE AMT. REQ'D. OF THE FOLLOWING FITTING'S. No. AS-502 FROM 7 TO 15; AS-503 " 12 " 16; AS-504 " 2 " 3; AS-518 " 2 " 3; AS-525 " 1 " 3; AS-528 " 2 " 4; AS-534 " 13 " 40; AS-541 " 3 " 4; AS-543 " 2 " 3; AS-547 " 1 " 3; AS-552 " 1 " 2; AS-565 " 6 " 22; AS-566 " 10 " 19; AS-567 " 6 " 18; AS-568 " 8 " 45; AS-569 " 10 " 18; AS-570 " 10 " 34; AS-571-B " 2 " 5; AS-588 " 2 " 3; AS-601 " 1 " 3 4-FITT. No. AS-559 CHANGE FROM 2½"-1¼x½" TO 2½"-1½"x½". 5-INCREASED THE AMT. REQ'D. OF THE FOLLOWING FITTING'S. No. AS-563 FROM 5 TO 7; AS-564 " 3 " 5; AS-571-A " 4 " 6; AS-572 " 2 " 4; AS-573 " 8 " 10; AS-574 " 3 " 7; AS-575 " 5 " 7; AS-576 " 15 " 20; AS-577 " 12 " 15; AS-578 " 4 " 6; AS-579 " 6 " 8; AS-580 " 2 " 4; AS-581 " 1 " 2 AND REVISED DESC FROM CHILL RING TO WELDING RING TO SUIT AVAIL.	F.J.D.	
4	2-2-78		1. DELETED AS-500, AS-511, AS-520 & AS-521. AS INDICATED ON Y.I.S. 4650-22-72. 2. ADDED AS-618 THRU AS-630. 3. REVISED THE QTY. FOR: AS-534 (40-48), AS-538 (12-21), AS-540 (14-16), AS-543 (3-7), AS-545 (1-2), AS-547 (3-5), AS-554 (1-4), AS-576 (20-40), AS-577 (15-40), AS-604 (3-4), AS-606 (2-3), AS-607 (2-4).	R.H.M.	
5	3-28-78		1. REINSTATED AS-520 & AS-521. 2. ADDED AS-631 (Y.I.S. 4650-22-90)	R.H.M.	3-31-78
6	4-28-78		1. ADDED FITTINGS AS-632 THRU AS-634 CONT'D. ABOVE	L.P.K.	

HULL	DESIGN	CHARGE
8451	21,340 DWT CONTAINERSHIP	10-8450
8450		10-8450

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 10 DEC. 1976
DRAWN G.L. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED J.S.H.
APPROVED

PLAN NO. M-4650-371-09-11
ALT. NO. 8

FITTING LIST
FOR
AUXILARY STEAM
SYSTEM

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	10-12-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

UAO-50131

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

ALTERATION	DATE OF ISSUE
ENGINEERING DISTRIBUTION	
OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R	
OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT. - 31	
MACH. DRAFT. - 32	
ELEC. DRAFT. - 33	
OUTFIT. DRAFT. - 35	
ESTIMATING	
J. DOUGHERTY	
PRODUCTION	
ORDER DEPT.	
JOINER CONT'R	
TOTAL ENG'R DIST.	
YARD DISTRIBUTION	
PIECE RATE	
TEST DEPARTMENT	
GROUND ASSEMBLY	
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL	
WET DOCK	
PIPE SHOP - 53	
OUTFIT #1 PIER	
PIPE DRAFT - 52	
BOILER SHOP - 59	
OUTSIDE MACH. - 60	
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 51	
PAINT SHOP - 75	
WELDING	
MOLD LOFT - 41	
BRACKET SHOP	
TOTAL YARD DIST.	

SQ. FT.

M-714

M-4650-371-09-11

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-11

FRAME 2 OF 3

LIST OF FITTINGS

SIZE	DESIGN CRITERIA P.S.I.	°F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG OR FIG. NO. OR EQUAL
	810	620	3000#		B16.11	FORGED STEEL	A-105	SOCKET WELDING TEE	AUX. STEAM SYSTEM	NOS. 90-93	BONNEY FORGE
								SCREWED CAP			
								SCREWED 90° ELBOW			
			150#			CAST STEEL	A-216	FLANGED STEAM SEPARATOR			WRIGHT AUSTIN TYPE "T"
	810	620	80		B16.9	SEAMLESS STEEL	A234 GR.WPB	WELDING CROSS - BUTT WELD		NOS. #90-#93	TUBE TURN PT.# 83
								CONCENTRIC REDUCER BUTT WELD			PT.# 91
			3000#	—	B16.11	FORGED STEEL	A-105	SOCKET WELDING TEE			BONNEY FORGE
				—	—			SOCKOLET I.P.S. RUN & OUTLET			
	150	411	3000#	—	—			SCREWED REDUCING BUSHING			
			—		—	STEEL		STUFFING BOX FOR PIPE (9" LG)			BETH STD EF-365
			3000#	—	B16.11	FORGED STL.	A105	SCRD. COUPLING		NOS. 90-93	BONNEY FORGE
								¾ MALE NPT x ¾ FEM NPT UNION			ANCHOR #12M-12UFS
								¾ FEM NPT x ¾ MALE NPT RED. ADAPTER			CAJON #12-RA-8
			—		—	STAINLESS STL		CORRUGATED HOSE			ANACONDA #LW21-1
			3000#		B16.11	FORGED STL	A105	S.W. REDUCING INSERT		NOS. 90-93	BONNEY FORGE
								TEE			
								TEE			
								REDUCING TEE S.W.			
								FILTER - VENDOR FURNISH			VENDOR FURNISH
			150#	—				STEAM TRAP SCRD ENDS	DRAIN FROM DEHUM. UNIT-HTG COILS	NOS. 90-93, 175, 187	SARCO TD-50
				—				STRAINER "Y" TYPE		NOS. 179, 90-93	MUELLER FIG. #13-62
	810	620	—	—	—	—		CHILL RING TYPE "A" SCH 80			BETH STD EF-318
						STEEL	ABS STEEL	3x3x¼" ANGLE (CUT TO SUIT)			
								3x¼" FLAT BAR			
			3000#		B16.11	FORGED STEEL	A-105	SCREWED REDUCING BUSHING		NOS. 90-93	BONNEY FORGED
								SCRD. BOSS FOR EX. HVY. PIPE			BETH STD EF-358 FIG. 9
								REDUCING INSERT SOCK WELD		NOS. 90-93	BONNEY FORGE
								REDUCING INSERT SOCK WELD			
								REDUCING ELBOW 90° S.W.			
								COUPLING SOCK WELD			

LIST OF FITTINGS

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT #7	UNIT #8	UNIT	UNIT	UNIT	UNIT	UNIT #13	UNIT 14	UNIT 15	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL
															~~502202~~	~~(REFER PAGE 8)~~			~~4~~	~~AS-500~~	~~1~~	~~10"~~	~~810~~	~~620~~	~~80~~	~~.594~~	~~B16.9~~	~~SEAMLESS STL~~
						2	6								SUPPLY					AS-501	8	4"	810	620	80	.337	B16.9	SEAMLESS STL
						10	5												3	AS-502	13	3"				.300		
						13	1												3	AS-503	16	2½"				.276		
						2	1								502202	502202-B			3	AS-504	3	4"x3"				.337x.300		
1															SUPPLY				4	AS-505	7	4"	125	411	40	.237		
																			4	AS-506	3	3"	125			.216		
	4						1					8								AS-507	24	2½"	150			.203		
1															502202				4	AS-508	1	5"x4"	125			.258x.237		
																			4	AS-509	1	4"x3"				.237x.216		
																			4	AS-510	2	3"x2"				.216x.154		
																~~(REFER PAGE 8)~~			~~4~~	~~AS-511~~	~~1~~	~~10"~~	~~810~~	~~620~~	~~80~~	~~.594~~		
																				AS-512	1	4"	810	620	80	.337		
						2														AS-513	3	3"				.300		
																				AS-514	1	2½"				.276		
						2														AS-515	2	3"x3"x2½"				.300x.276		
						1	1													AS-516	2	3"x3"x2"				.300x.218		
	1						1					1								AS-517	4	2½"	150	411	40	.203		
							1					2				502202-B			3	AS-518	3	2½"x2½"x2"			40	.203x.154		
																				AS-519	2	2½"x2½"x1½"				.203x.145		
						1										(REFER PAGE 9)	502202-C		4,5	AS-520	1	10"x6"	810	620	80	.594x.432		
						1										(REFER PAGE 9)	502202-C		4,5	AS-521	1	6"x2½"				.432x.276		
																				AS-522	2	4"x3"	810	620	80	.337x.300		
																				AS-523	1	4"x2"				.337x.218		
						1														AS-524	1	3"x2½"				.300x.276		
						2	1									502202-B			3	AS-525	3	2½"x2"				.276x.218		
							1													AS-526	2	2½"x2"	150	411	40	.203x.154		
	1																			AS-527	1	2½"x1"				.203x.133		
			2				2								502202-1X	502202-A	502202-B		2,3	AS-528	4	4"	810	620	80	.337		
															502207					AS-529	3	2½"				.276		
															502208					AS-530	1	3"			600#	—	B16.5(FLGS.)	CAST STEEL
1																				AS-531	2	2"				—	—	
	1				2										502208	502208-A			1	AS-532	3	1½"	150	411		—	—	
															502208					AS-533	1	¾"				—	—	
3						23	22								502208-B	502203-E			3,4	AS-534	48	2"	810	620	3000#	—	B16.11	FORGED STEEL
	4				1		3					8								AS-535	30	1½"	150	411		—		
																				AS-536	5	1¼"				—		
							5						2							AS-537	19	1"				—		
					1	6	14									502202-G			4	AS-538	21	¾"						
																				AS-539	5	½"						
						7	8					1				502202-G			4	AS-540	16	2"	810	620				
	2											2				502203-E			3	AS-541	4	1½"	150	411				
																				AS-542	1	1¼"						
						4	3									502203-E	502202-G		3,4	AS-543	7	1"						
						4	2									502203-J			7	AS-544	6	¾"						
						1	1								502203	502202-G			4	AS-545	2	2"x¾"						
	1													1		502203-M			8	AS-546	2	1½"x1"						
						3	2								502203-B	502203-E	502202-G		3,4	AS-547	5	2"x1½"						
															502203					AS-548	1	2"x1¼"						
															502203-B					AS-549	1	1¼"x1"						
	1						1								502205					AS-550	2	2½"x1½"						
																				AS-551	1	2½"x1¼"						
							2									502205-B			3	AS-552	2	2½"x1"						
							1													AS-553	2	2½"x2"x½"						
						1	3									502205-C			4	AS-554	4	2"x1"						
																				AS-555	1	2"x½"						
																				AS-556	1	1½"x1"						
																				AS-557	1	1½"x½"						
																				AS-558	1	1¼"x1"						
						1	2								502205-B				3	AS-559	7	2½"x1½"x½"						
															502205					AS-560	1	¾"x¼"						
						2	2								UAO					AS-561	6	1"			80			
						3	1												3	AS-562	7	½"						
															502211	502211-C			3	AS-563	7	10"	810	620	—			
																			3	AS-564	5	10"						
	4		2			4	9									502211-B	502211-C		2,3	AS-565	22	4"						
			4			2	10									502211-C			3	AS-566	19	4"						
						9	6												3	AS-567	18	3"						
						29	12												3	AS-568	45	3"						
						14	1												3	AS-569	18	2½"						
						30	1												3	AS-570	34	2½"						
						2													3	AS-571A	6	2"						
						2	1												3	AS-571B	5	2"						
1																			3	AS-572	4	4"	150	411				
8																502211-B			2,3	AS-573	10	4"						
																502211-C			3	AS-574	7	3"						
																			3	AS-575	7	3"						
	14																502211-D		34	AS-576	40	2½"						
	5											22					502211-D		34	AS-577	40	2½"						
1																			3	AS-578	6	2"						
												4							3	AS-579	8	2"						
																			3	AS-580	4	1½"						
	1																		3	AS-581	2	1"						STEEL
2	2						2						2		UAO					AS-582	10	1"						NIPPLE - STEEL FLANGE - FSD STL
					1														1	AS-583	1	1¼"			150#	—	—	STAINLESS STL
					1	1	1								502203-C				1	AS-584	5	2"x2"x1½"			3000#	—	B16.11	FORGED STEEL
		2			1														1	AS-585	5	2"x1½"x1½"				—		
					1														1	AS-586	1	1½"x1¼"x1¼"				—		
					1														1	AS-587	1	1¼"x1¼"x¾"				—		
1					2											502203-E			1,3	AS-588	3	1½"x1¼"						
2															502202-A				2	AS-589	2	4"			40	.237	B16.9	SEAMLESS STL
1																			2	AS-590	1	4"			40	.237	B16.9	
2															502205-A				2	AS-591	2	4"x¾"			3000#	—	—	FORGED ST'L.
1															502202-A				2	AS-592	1	4"x2"			40	.237x.154	B16.9	SEAMLESS ST'L.
			1												UAO				2	AS-593	1	1"			—	—	—	STEEL
												1							3	AS-594	1	1½"			—	—	—	
		1													502203-D				2	AS-595	1	1½"x1"x1"	150	411	3000#	—	B16.11	FORGED STL
		1																	2	AS-596	1	1½"x1"x2"				—		
		1														SUPPLY			2,8	AS-597	2	2"						
	2														502202-A				2	AS-598	2	2½"			40		B16.9	SMLS STL.
	1														502203-D				2	AS-599	1	1½"x1"			3000#		—	FORGED STL.
	1																		2	AS-600	1	½"					B16.11	
	1												2		502205-A	502205-B			2,3	AS-601	3	2½"x½"					—	
	1																		2	AS-602	1	2½"x½"					—	
	1																		2	AS-603	1	2½"x¼"					—	
						1	3								UAO				34	AS-604	4	⅜"	810	620	80		—	FORGED STL
							1								502202-B				3	AS-605	1	[illegible]	150	411	40	.203x.154	B16.9	SEAMLESS STL.
						1	2								502205-B	502202-G			34	AS-606	3	2½"x½"			3000#	—	—	FORGED STL.
						2	2								502203-E	502202-G			34	AS-607	4	1"x¾"			3000#	—	—	
							1												3	AS-608	2	½"	210	620	600#	—	—	STAINLESS STL

LIST OF FITTINGS

STRUCTURAL MODULAR UNIT APPLICATION UNIT 6	UNIT #7	UNIT #8	UNIT #13	REQUISITION NO	CODE NO (FUTURE USE)	ALT NO	FITTING IDENT. NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM STD	MATERIAL	ASTM SPEC	DESCRIPTION	
		2		SUPPLY		3	AS-609	2	½"	810	620	3000#		B16.11	FORGED STEEL	A-234	SOCKET WELDING TEE	AUX. STEAM SYSTEM
		1		502203-E		3	AS-610	1	½"								SCREWED CAP	
		3		SUPPLY		3	AS-611	3	½"	↓	↓	↓		↓	↓	↓	SCREWED 90° ELBOW	
			1	502213		3	AS-612	1	1½"			150#			CAST STEEL	A-216	FLANGED STEAM SEPARATOR	
	2			502202-B		3	AS-613	2	3"x3"x3"x3"	810	620	80	.300	B16.9	SEAMLESS STEEL	A234 GR.WPB	WELDING CROSS - BUTT WELD	
	1			↓		3	AS-614	1	3"x2"			↓	.300x.218	↓	↓	↓	CONCENTRIC REDUCER BUTT WELD	
	2			502203-E		3	AS-615	2	2"			3000#	—	B16.11	FORGED STEEL	A-105	SOCKET WELDING TEE	
				502205-B		3	AS-616	1	10"x3	↓	↓	↓	—	—			SOCKOLET I.P.S. RUN & OUTLET	
				502203-E		3	AS-617	6	1"x¾	150	411	3000#	—	—	↓	↓	SCREWED REDUCING BUSHING	↓
			3	UAO		4	AS-618	3	1½"			—	—	—	STEEL	[illegible] GR.A	STUFFING BOX FOR PIPE (9" LG)	
	6	6		SUPPLY		4	AS-619	12	¾"			3000#	—	B16.11	FORGED STL.	A105	SCRD. COUPLING	
	3	3		502209-G		4	AS-620	6	¾"					—			¾" MALE NPT x ¾" FEM. NPSM. UNION	
	3	3		502203-G		4	AS-621	6	¾"x½"			↓		—	↓	↓	¾" FEM NPT x ½" MALE NPT RED. ADAPTER	
	3	3		50001		4	AS-622	6	¾"			—		—	STAINLESS STL		CORRUGATED HOSE	
	2	2		502203-G		4	AS-623	4	1½"x¾"			3000#		B16.11	FORGED STL	A234	S.W. REDUCING INSERT	
	1	1		502203-G		4	AS-624	2	1½"x1½"x¾"								TEE	
1						4	AS-625	1	1½"x1½"x¾"								↓	
	3	3				4	AS-626	6	¾"x¾"x½"								TEE	
	1			↓		4	AS-627	1	2"x2"x¾"	↓	↓	↓		↓	↓	↓	REDUCING TEE S.W.	
	1			500047		4	AS-628	1	¾"	—	—	—					FILTER - VENDOR FURNISH	
	1			502210		4	AS-629	1	1"			150#		—	STN. STL.	ASTM TY 316	STEAM TRAP SCRD ENDS	DRAIN FROM DEHUM
	1			502208-B		4	AS-630	1	1"			600#		—	CAST STL.	A216 GR.WCB	STRAINER "Y" TYPE S.W. [illegible]	↓
	1			502211-E		5	AS-631	1	6"	810	620	—	—	—	—	SAE 1020	CHILL RING TYPE "A" SCH 80	
	19'0"			UAO		6	AS-632	19'-0"	—	—	—	—	—	—	STEEL	A.B.S. STEEL	3"x3"x5/16" ANGLE (CUT TO SUIT)	
	6'0"			↓		6	AS-633	6'-0	—	—	—	—	—	—	↓	↓	3"x¼" FLAT BAR	
	1			502203-H		6	AS-634	1	½"x⅜"	150	411	3000#	—	B16.11	FORGED STEEL	A-105	SCREWED REDUCING BUSHING	
	1	1		UAO		7	AS-635	2	¼"	810	620	—	—	B2.1			SCRD. BOSS FOR EX. HVY. PIPE	
	1	1		SUPPLY		7	AS-636	2	¾"x½"	150	411	3000#	—	B16.11			REDUCING INSERT SOCK. WELD	
	1	1		↓		7	AS-637	2	2"x¾				—				REDUCING INSERT SOCK. WELD	
	3	3		502203-J		7	AS-638	6	¾"x½"				—				REDUCING ELBOW 90° S.W.	
	2	2		502203-M		8	AS-639	4	1"x¾"	↓	↓	↓	—	↓	↓	↓	COUPLING - SOCK. WELD	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-11

FRAME 3 OF 3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

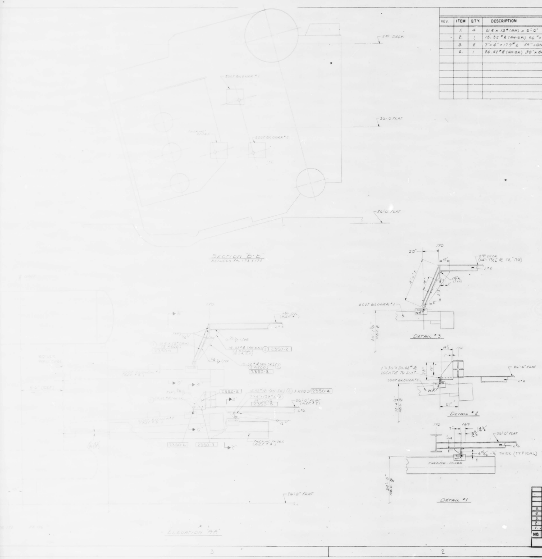
NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-14

FRAME 1 OF 2

MATERIAL LIST							
REV.	ITEM	QTY.	DESCRIPTION	MAT'L	SPEC.	REMARKS	REQ. NO.
	1.	4	W 6 × 15# (AH) × 5'-0"	STL.	ABS GR. AH-36 S.K.	FOR SOOT BLOWER #1	*
	2.	1	15.32# ℞ (AH-SK) 66" × 110"	STL.	ABS GR. AH-36 S.K.	CUT ITEMS SHOWN IN DETAILS & SECTIONS	*
	3.	2	7" × 4" × 17.9# L 54" LONG	STL.	ABS GR. AH-36 S.K.	FOR THERMO. PROB	*
	4.	1	20.42# ℞ (AH-SK) 30" × 64"	STL.	ABS GR. AH-36 S.K.	CUT ITEMS SHOWN IN DETAILS & SECTIONS	*

ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	1-20-78		1 ADDED OPTICAL DETAIL MARKS	WAN	


2ND DECK
36'-0" FLAT
26'-0" FLAT
SECTION "B-B"
SOOT BLOWER #1
SOOT BLOWER #2
170
20"
18"
2ND DECK (44'-7 9/16" @ FR. 170)
L #5
1 1/4 R (TYP)
40'-1 7/8" ABV. ℄
DETAIL #3
14 1/2"
1"
16"
29"
7" × 30" × 20.42# ℞ LOCATE TO SUIT
W.P.
21"
L #4
35'-4 1/2" ABV. ℄
DETAIL #2
169
7"
13 3/4"
14 1/2"
36'-0" FLAT
L #6
4 15/16" - 1/2" THICK (TYPICAL)
THERMO-PROBE
34'-8" ABV. ℄
DETAIL #1
W 6 × 15# (AH) (2 REQ'D)
2350-1
15.32# ℞ (AH-SK) (3 REQ'D)
2350-2
2350-3
2350-4
2350-5
2350-6
2350-7
2350-8
7" × 4" × 17.9# L 54" LONG
20.42# ℞ (AH-SK)
3 REQ'D
THERMO PROBE (REF. #4)
ELEVATION "A-A"
UAO-50232-A

NO.	PLAN NO.	TITLE
5.	DIAMOND POWER 30793-003C	IK-520 SOOT BLOWER
4.	DIAMOND POWER 309763-005C	THERMO-PROBE 500
3.	FOSTER WHEELER 37-2891-5-26	GEN. ARRANGEMENT OUTSIDE ELEV'S.
2.	M4650-129-02-12	FLATS BELOW 2ND DK. FR. 157-181
1.	M4650-129-01-14	TRAN. SECT. BHD'S. FR'S & STANCHIONS

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650		4650

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/2" = 1'-0" DATE 8-8-77
DRAWN DIMELLA APPROVED
TRACED APPROVED
CHECKED F.T.G. APPROVED

PLAN NO. M4650-371-09-14 ALT. NO. 1

SUPPORTS FOR
RETRACTABLE SOOT BLOWERS
AND THERMO-PROBE 500

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	9-9-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE
	ALTERATION	0 1
	ENGINEERING DISTRIBUTION	9-8-77 1-27-78
MAIL	OWNERS	
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S. NAVY	
	U.S.C.G.	
	JOINER CONT'R	
INSPECTION	OWNER'S INSP.	1 1
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	1 1
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
OFFICE	HULL DRAFT - 21	1 1
	MACH. DRAFT - 22	2 2
	ELEC. DRAFT - 23	1 1
	OUTFIT DRAFT - 25	
	ESTIMATING	
MISC.	PRODUCTION (BCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	7 7
	YARD DISTRIBUTION	
YARD	PIECE RATE - 11	1 1
	TEST DEPARTMENT	
	PLANNING	
STRUCTURAL	GROUND ASSEMBLY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL-45	
	WET DOCK	
MACH'Y & OUTFIT	PIPE SHOP - 52	
	OUTFIT. #1 PIER	
	PIPE DRAFT - 52	
	BOILER SHOP - 58	
	OUTSIDE MACH. - 60	
	ELECTRIC SHOP - 70	
	SHEET MET. SHOP - 74	
	COPPER SHOP - 51	
	PAINT SHOP - 75	
OTHER	WELDING	
	MOLD LOFT - 41	
	BRACKET SHOP	
	TOTAL YARD DIST.	

4650-51-ALT. 0
4650-51-ALT. 1

17.5 SQ. FT.

M-715

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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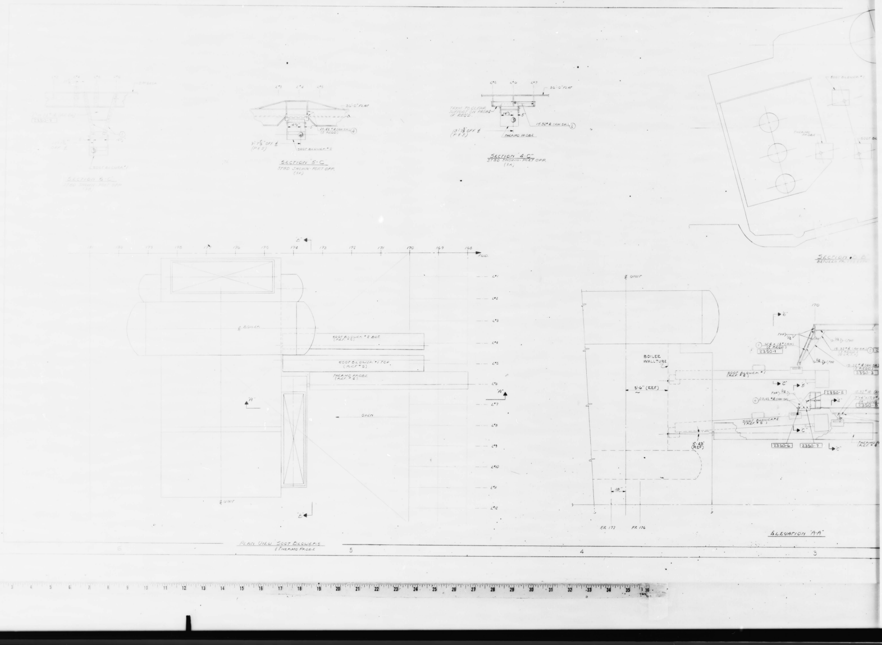
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-371-09-14

FRAME 2 OF 2



SECTION "5-C"
STBD SHOWN - PORT OPP.
(3A)

SECTION "4-C"
STBD SHOWN - PORT OPP.
(3A)

PLAN VIEW SOOT BLOWERS
& THERMO PROBE

ELEVATION "A-A"

36'-0" FLAT
4½"
5"
20.42 # ℞ (AH-SH.) ④
(2 REQD)
9'-7⅝" OFF ℄
(P & S)
SOOT BLOWER #2
TRIM TO CLEAR SUPPORT ON PROBE IF REQ'D.
14½"
15.32 # ℞ (AH-SH.) ②
13'-7⅜" OFF ℄
(P & S)
THERMO PROBE
181
180
179
178
177
176
175
174
173
172
171
170
169
168
FWD.
"B"
"A"
℄ BOILER
SOOT BLOWER #2 BOT.
(REF. #5)
SOOT BLOWER #1 TOP.
(REF. #5)
THERMO PROBE
(REF. #6)
OPEN
℄ UNIT
L#1
L#2
L#3
L#4
L#5
L#6
L#7
L#8
L#9
L#10
L#11
L#12
BOILER
WALLTUBE
5'-6" (REF)
3°-43' (REF)
18"
FR. 177
FR. 176
SOOT BLOWER #1
(REF. #5)
SOOT BLOWER #2
(REF. #5)
W6 x 13# (AH)
(2 REQD)
2350-1
15.32 # ℞ (AH-SH.)
2350-3
2350-5
2350-6
2350-7
2350-8
20.42 # ℞ (AH-SH.)
TYP
¼
"C"
"4"
"5"
"6"
SECTION "B-B"
6
5
4
3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. M4650-372-1

FRAME 1 OF 2

DESCRIPTION	CATALOG OR DWG. NO.	REG. NO.	FITTING NO.	SIZE	TYPE	MATERIAL	SERVICE	ARRGT. DRWG. NO.	DETAIL DRAWING	LOCATION: PORT OR STBD.	LOCATION: FRAME	LOCATION: ABOVE ℄	PIPING DIAGRAM REF. NO.	ITEM NO.
ANGLE STOP-CHECK VALVE, F.F.D.	EDWARDS FIG. NO. 1047	503300		1½"	FLGD NOZZLE	STEEL PIPE	BOILER BLOW OVBD. DISCHARGE-PORT	M-4650-111-18	M4650-111-18	STB'D	BETWEEN FR. 175 & 176	15'-9"	1	1
ANGLE STOP-CHECK VALVE, F.F.D.	EDWARDS FIG. NO. 1047	503300		1½"	FLGD NOZZLE	STEEL PIPE	BOILER BLOW OVBD. DISCHARGE-STBD.	M-4650-111-17	M4650-111-17	STB'D	BETWEEN FR. 175 & 176	15'-9"	1	2
GLOBE STOP-CHECK VALVE, F.F.D., O.S.&Y. RISING BOLTED FLGD. YOKE BONNET	LUNKENHEIMER FIG. NO. 1400-X	504500-C		5"	FLGD NOZZLE	STEEL PIPE	DISTILLING PLANT SALT WATER OVBD. DISCH.	M-4650-111-11	M4650-111-16	PORT	BETWEEN FR. 163 & 162	16'-8"	2	3
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM), AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		8"	FLGD NOZZLE	STEEL PIPE	DISTILLING PLANT LOW SEA SUCTION	M-4650-111-16	M4650-372-1	PORT	BETWEEN FR. 160 & 161	6'-6"	2	4
GATE VALVE, W/MONEL LINER, F.F.D., O.S.&Y. [illegible] MOTOR OPERATOR	FABRI VALVE CO. DRWG. NO. AA-704	504600-A		30"	FFD	STEEL PIPE	MAIN CIRCULATING WATER INLET SCOOP	M-4650-111-15	M4650-372-2	STBD	BETWEEN FR. 160 & 162	7'-7½"	3	5
GLOBE VALVE, F.F.D.	LUNKENHEIMER FIG. NO. 1150-MOD	501300		1"	FLGD NOZZLE	STEEL PIPE	MAIN CIRCULATING WATER INLET SCOOP-STEAMING OUT	M-4650-111-15	M4650-372-2	STBD	BETWEEN FR. 159 & 160	APPROX. 8'-2¼"	3	6
														7
GATE VALVE, W/MONEL LINER, F.F.D., O.S.&Y. [illegible] MOTOR OPERATOR	FABRI VALVE CO. DRWG. NO. AA-704	504600-A		[illegible]	FLGD NOZZLE	STEEL PIPE	MAIN SEA CHEST HIGH SUCTION	M-4650-111-15	M4650-372-1	STBD	BETWEEN FR. 163 & 165	9'-0"	3	8
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM), AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		10"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE, FIRE TK. CLEANING & CLEAN BALLAST SYSTEM HIGH SEA SUCTION	M-4650-111-15	M4650-372-1	STBD	BETWEEN FR. 163 & 165	7'-4"	3	9
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM)	LUNKENHEIMER FIG. NO. 1404	[illegible]		2½"	FLGD NOZZLE	STEEL PIPE	MAIN SEA CHEST HIGH SUCTION-VENT	M-4650-181-23	M4650-372-1	STBD	BETWEEN FR. 164 & 165	8'-8½"	3	10
GLOBE VALVE, F.F.D.	LUNKENHEIMER FIG. NO. 1150-MOD	501300		1"	FLGD NOZZLE	STEEL PIPE	MAIN SEA CHEST HIGH SUCTION-STEAMING OUT	M-4650-111-15	M4650-372-1	STBD	BETWEEN FR. 162 & 163	8'-7½"	3	11
														12
GATE VALVE, W/MONEL LINER, F.F.D., O.S.&Y. [illegible] MOTOR OPERATOR	FABRI VALVE CO. DRWG. NO. AA-704	504600-A		[illegible]	FLGD NOZZLE	STEEL PIPE	MAIN CIRC. WATER OUTLET SCOOP	M-4650-111-16	M4650-111-16 M4650-372-2	PORT	BETWEEN FR. 166 & 169	11'-6¾"	3	13
														14
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM) ELECTRIC MOTOR OPERATED	LUNKENHEIMER FIG. NO. 1404	504600-C		10"	FLGD NOZZLE	STEEL PIPE	MAIN CONDENSER CIRC. WATER OVBD. DISC.	M-4650-111-16	M-4650-111-16	PORT	BETWEEN FR. 165 & 166	15'-3"	3	15
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM) ELECTRIC MOTOR OPERATED	LUNKENHEIMER FIG. NO. 1404	504600-C		8"	FLGD NOZZLE	STEEL PIPE	LUBE OIL COOLER CIRC. WATER OVBD. DISCH.	M-4650-111-15	M4650-111-16	STBD	BETWEEN FR. 165 & 166	16'-10⅞"	3	16
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM), AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		10"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE, FIRE TK. CLEANING & CLEAN BALLAST SYSTEM LOW SEA SUCTION	M-4650-111-16	M4650-372-1	PORT	BETWEEN FR. 160 & 161	6'-6"	4	17
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM)	LUNKENHEIMER FIG. NO. 1404	[illegible]		2½"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE LOW SUCTION SEA CHEST-VENT	M-4650-181-23	M4650-372-1	PORT	BETWEEN FR. 160 & 161	7'-10½"	4	18
GLOBE VALVE, F.F.D.	LUNKENHEIMER FIG. NO. 1150-MOD	501300		1"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE LOW SUCTION SEA CHEST-STEAMING OUT	M-4650-111-16	M4650-372-1	PORT	BETWEEN FR. 160 & 161	7'-9½"	4	19
GLOBE VALVE, F.F.D.	[illegible]	[illegible]		1"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE & FIRE TANK CLEANING PUMP RECIRC.	M-4650-111-16	M4650-372-1	PORT	BETWEEN FR. 160 & 161	7'-10½"	4	20
GLOBE STOP CHECK VALVE, F.F.D., O.S.&Y. RISING BOLTED FLGD. YOKE BONNET & AIR MOTOR OPERATOR	LUNKENHEIMER FIG. NO. 1400-X	[illegible]		8"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE & FIRE TANK CLEANING PUMP OVBD. DISCH.	M-4650-111-15	M4650-111-15	STBD	BETWEEN FR. 162 & 163	16'-4"	4	21
GLOBE STOP CHECK VALVE, F.F.D., O.S.&Y. RISING BOLTED FLGD. YOKE BONNET	LUNKENHEIMER FIG. NO. 1400-X	504500		4"	FLGD NOZZLE	STEEL PIPE	MAIN VACUUM PUMP HEAT EXCHANGERS & T.G. AIR COOLERS OVBD. DISCH.	M-4650-111-16	M4650-111-16	PORT	BETWEEN FR. 163 & 162	16'-8"	4	22
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM), AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		6"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. HIGH SEA SUCTION	M-4650-111-17	M4650-372-3	STBD	BETWEEN FR. 181 & 182	10'-6"	4	23
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM)	LUNKENHEIMER FIG. NO. 1404	[illegible]		2"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. HIGH SEA SUCTION-VENT	M-4650-181-23	M4650-372-3	STBD	BETWEEN FR. 181 & 182	11'-8½"	4	24
GLOBE VALVE, F.F.D.	LUNKENHEIMER FIG. NO. 1150-MOD	501300		1"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. HIGH SEA SUCTION-STEAMING OUT	M-4650-111-17	M4650-372-3	STBD	BETWEEN FR. 181 & 182	11'-8½"	4	25
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM), AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		8"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. LOW SEA SUCTION	M-4650-111-17	M4650-372-3	STBD	BETWEEN FR. 180 & 181	9'-11½"	4	26
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM)	LUNKENHEIMER FIG. NO. 1404	[illegible]		2"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. LOW SEA SUCTION-VENT	M-4650-181-23	M4650-372-3	STBD	BETWEEN FR. 180 & 181	12'-4½"	4	27
GLOBE VALVE, F.F.D.	LUNKENHEIMER FIG. NO. 1150-MOD	501300		1"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. LOW SEA SUCTION-STEAMING OUT	M-4650-111-17	M4650-372-3	STBD	BETWEEN FR. 180 & 181	9'-11½"	4	28
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM), AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		6"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. AIR COOLER & S.W. COOLER OVBD. DISCH.	M-4650-111-18	M-4650-111-18	PORT	BETWEEN FR. 181 & 182	10'-6"	4	29
GLOBE STOP CHECK VALVE, F.F.D., O.S.&Y. RISING BOLTED FLGD. YOKE BONNET	LUNKENHEIMER FIG. NO. 1400-X	504500		10"	FLGD NOZZLE	STEEL PIPE	SHIPS STORES AND CARGO REFRIGERATION CONDENSERS OVBD. DISCH.	M-4650-111-15	M4650-111-15	STBD	BETWEEN FR. 163 & 164	15'-11"	4	30
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM), AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		8"	FLGD NOZZLE	STEEL PIPE	FIRE PUMP SUCTION SEA CHEST	M-4650-111-28	M-4650-372-3	STBD	BETWEEN FR. 185 & 186	7'-6"	5	31
SOLID WEDGE DISC GATE VALVE, F.F.D., O.S.&Y. (STEM)	LUNKENHEIMER FIG. NO. 1404	[illegible]		2½"	FLGD NOZZLE	STEEL PIPE	FIRE PUMP SUCTION SEA CHEST-VENT	M-4650-181-23	M-4650-372-3	STBD	BETWEEN FR. 185 & 186	7'-0"	5	32
GLOBE VALVE, F.F.D.	POWELL FIG. NO. [illegible]	504500		[illegible]	FLGD NOZZLE	STEEL PIPE	FIRE PUMP SUCTION SEA CHEST RECIRC. FROM FIRE PUMP	M-4650-111-29	M-4650-372-3	STBD	BETWEEN FR. 185 & 186	7'-0"	5	33
GLOBE VALVE, F.F.D.	LUNKENHEIMER FIG. NO. 1150-MOD	501300		1"	FLGD NOZZLE	STEEL PIPE	FIRE PUMP SUCTION SEA CHEST-STEAMING OUT	M-4650-111-28	M-4650-372-3	STBD	BETWEEN FR. 185 & 186	7'-6"	5	34
GLOBE STOP CHECK VALVE, F.F.D., O.S.&Y. RISING	LUNKENHEIMER FIG. NO. 1400-X	[illegible]		5"	FLGD NOZZLE	STEEL PIPE	FWD. FIREMAIN EDUCTOR OVBD. DISC.	M-4650-181-9	M-4650-181-9	PORT	BETWEEN FR. 14 & 15	[illegible]	6	35
														36
GLOBE STOP CHECK VALVE, F.F.D., O.S.&Y. RISING BOLTED FLGD. YOKE BONNET & AIR MOTOR OPERATOR	LUNKENHEIMER FIG. NO. 1400-X	[illegible]		8"	FLGD NOZZLE	STEEL PIPE	BILGE, BALLAST, S.W. SERVICE PUMP OVBD. DISCH.	M-4650-111-16	M-4650-111-16	PORT	BETWEEN FR. 162 & 163	17'-1"	6	37
HORIZONTAL SWING CHECK VALVE, F.F.D., WITH [illegible]	LUNKENHEIMER FIG. NO. [illegible]	505400		10"	FLGD NOZZLE	STEEL PIPE	FUEL OIL SERVICE TANKS OVERFLOW OVBD. DISCH.-PORT	M-4650-181-07-8	M-4650-181-07-8	PORT	BETWEEN FR. 154 & 156	45'-7"	7	38
HORIZONTAL SWING CHECK VALVE, F.F.D., WITH [illegible]	LUNKENHEIMER FIG. NO. [illegible]	505400		10"	FLGD NOZZLE	STEEL PIPE	FUEL OIL SERVICE TANKS OVERFLOW OVBD. DISCH.-STBD.	M-4650-181-07-8	M-4650-181-07-8	STBD	BETWEEN FR. 154 & 156	45'-7"	7	39
[illegible]	LUNKENHEIMER FIG. NO. [illegible]	504900		[illegible]	FLGD NOZZLE	STEEL PIPE	AFT FIREMAIN & RUDDER TANKS EDUCTOR OVBD. DISCH.	M-4650-182-12-7	M-4650-182-12-7	PORT	BETWEEN FR. [illegible]	39'-10"	6	40
HORIZONTAL SWING CHECK VALVE, F.F.D., WITH [illegible]	LUNKENHEIMER FIG. NO. [illegible]	[illegible]		10"	FLGD NOZZLE	STEEL PIPE	PORT-STBD HEELING TANKS OVERFLOW OVERBOARD DISCH.	M-4650-111-20	M-4650-111-20	PORT	BETWEEN FR. 165 & 161	34'-10"	8	41
[illegible]	[illegible]	[illegible]		[illegible]	FLGD NOZZLE	STEEL PIPE	BOS'N STORES SUMPS OVERBOARD DISCHARGE	M-4650-181-7	M-4650-181-7	PORT	BETWEEN FRS. 14 & 15	41'-6"	6	42
[illegible]	[illegible]	[illegible]		[illegible]	FLGD NOZZLE	STEEL PIPE	FREON RELIEF OVERBOARD DISCHARGE CARGO REFRIGERATOR	M-4650-402-3	M-4650-402-3	PORT	BETWEEN FRS. 11 & 12	37'-3"	9	43
[illegible]	[illegible]	[illegible]		[illegible]	FLGD NOZZLE	STEEL PIPE	WATER CLOSET & [illegible] OVERBOARD DISCHARGE	M-4650-111-17	M-4650-111-17	STBD	BETWEEN FRS. 174 & 175	17'-6"	10	44
[illegible]	[illegible]	[illegible]		[illegible]	FLGD NOZZLE	STEEL PIPE	SEWAGE PUMP OVERBOARD DISCHARGE	M-4650-111-17	M-4650-111-17	STBD	BETWEEN FRS. 176 & 177	17'-6"	10	45
[illegible]	[illegible]	[illegible]		4"	FLGD NOZZLE	STEEL PIPE	SEWAGE EXPULSOR DISCHARGE	M-4650-111-16	M-4650-111-16	PORT	BETWEEN FRS. 169 & 170	17'-6"	10	46
[illegible]	[illegible]	[illegible]		[illegible]	FLGD NOZZLE	STEEL PIPE	FREON OVERBOARD DISCHARGE SHIPS STORES	M4650-402-1-2	M4650-402-1-2	STBD	BETWEEN FRS. 169 & 170	38'-5"	11 & 12	47
SOLID WEDGE DISC, GATE VALVE, F.F.D. SCREW & YOKE-RISING STEM	POWELL FIG. [illegible]	[illegible]		2"	FLGD. NOZZLE	STEEL PIPE	HEELING TRANSFER PUMP OVERBOARD DISCHARGE	M-4650-111-16	M-4650-111-16	PORT	BETWEEN FR. 162 & 163	17'-9"	4	48
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GENERAL NOTES

1. SEA VALVES ARE NOT TO BE ORDERED FROM THIS DRAWING BUT ARE TO BE ORDERED FROM THE SYSTEM INVOLVED.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	6-7-78	ALL	1- FOR ITEM NOS. 44 & 45 CHANGED THE MAT'L & CATALOG FIG. NO. (WAS DUCTILE IRON GALV., & WALWORTH FIG. NO. 9726F) 2- FOR ITEM NO. 15 UNDER LOCATION ADDED THE "ABOVE ℄" DIM. 3- ADDED ITEM NOS. 46 & 47.	PCG	
2	7-28-78	ALL	1-ITEM No. 48 ADDED	P.G.	

REFERENCE PLANS

NO.	PLAN NO.	TITLE
12	YORK DWG-076-04147E	A.C. PLANT REFRIGERANT PIPING DIAGRAM
11	YORK DWG-076-04380E	S.S. PLANT REFRIGERANT PIPING DIAGRAM
10	4650-111-20-92	SEWAGE DISPOSAL SYSTEM
9	4650-111-20-96	CARGO REFRIGERATION SYSTEM
8	4650-111-20-56	HEELING TANK TRANSFER & CONTROL SYSTEMS
7	4650-111-20-60	FUEL OIL FILLING TRANSFER & PURIFYING SYSTEM
6	4650-111-20-54	BILGE & CLEAN BALLAST SYSTEMS
5	4650-111-20-50	FIREMAIN SYSTEM
4	4650-111-20-46	SALT WATER SERVICE SYSTEM
3	4650-111-20-45	MAIN SALT WATER CIRCULATING SYSTEM
2	4650-111-20-39	LOW PRESSURE DISTILLING PLANT SYSTEM
1	4650-111-20-17	SAFETY & RELIEF VALVE ESCAPE SYSTEM

HULL	DESIGN	CHARGE
4651	27,340 D.W.T. CONTAINERSHIP	10-8490
4650	"	10-8490

JOB NO. AS NOTED

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 27 JAN. 1977
DRAWN G. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-372-1
ALT. NO. 2

LIST OF SEA VALVES AND FITTINGS

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS					
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

4650-51
4650-51 KERL
4650-51 RWA

		DATE OF ISSUE		
	ALTERATION	0	1	2
	ENGINEERING DISTRIBUTION	[illegible]	6-12-78	8-3-78
MAIL	OWNERS			
MAIL	AMERICAN BUREAU			
MAIL	LLOYD'S R.S.			
MAIL	U.S.M.A.			
MAIL	U.S. NAVY			
MAIL	U.S.C.G.			
MAIL	JOINER CONT'R.			
INSPECTION	OWNER'S INSP.	1	1	1
INSPECTION	AM. BU. INSP.			
INSPECTION	LLOYD'S INSP.			
INSPECTION	U.S.M.A. INSP.	1	1	1
INSPECTION	U.S. NAVY INSP.			
INSPECTION	U.S.C.G. INSP.			
OFFICE	HULL DRAFT. - 21	1	1	1
OFFICE	MACH. DRAFT. - 22	2	2	2
OFFICE	ELEC. DRAFT. - 23	1	1	1
OFFICE	OUTFIT. DRAFT. - 25			
OFFICE	ESTIMATING			
OFFICE	[illegible]	1	1	1
MISC.	PRODUCTION (BCO)			
MISC.	ORDER DEPT.			
MISC.	JOINER CONT. YARD			
MISC.	[illegible]	1		
	TOTAL ENG'R. DIST.	[illegible]	7	7
	YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]
YARD	[illegible]	1	1	1
YARD	P. MCNAIR	1	1	1
YARD	PIECE RATE - 11	1	1	1
YARD	TEST DEPARTMENT			
YARD	[illegible]	1	1	1
YARD	[illegible] PLANNING	1	1	1
STRUCTURAL	GROUND ASSEMBLY	2	2	2
STRUCTURAL	35 DEPT.	2	2	2
STRUCTURAL	H. LEVY	1	1	1
STRUCTURAL	J. SIMMONS	1	1	1
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	NO. WAY			
STRUCTURAL	STRUCT. SUPER.	2	2	2
STRUCTURAL	OPTICAL DETAIL-45	2	2	2
STRUCTURAL	WET DOCK			
MACH'Y & OUTFIT.	PIPE SHOP - 52	[illegible]	[illegible]	6
MACH'Y & OUTFIT.	OUTFIT. #1 PIER	1	1	1
MACH'Y & OUTFIT.	PIPE DRAFT. - 52	2	2	2
MACH'Y & OUTFIT.	BOILER SHOP - 58	1	1	1
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60	1	1	2
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70			
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74			
MACH'Y & OUTFIT.	COPPER SHOP - 51			
MACH'Y & OUTFIT.	PAINT SHOP - 75	1	1	1
OTHER	WELDING			
OTHER	G. MATTOX	1	1	1
OTHER	MOLD LOFT - 41	1	1	1
OTHER	BRACKET SHOP			
	TOTAL YARD DIST.	[illegible]	27	28

ALT. 0
ALT. 1
ALT. 2

3 2 1

M-716

10.4 SQ. FT.

M-4650-372-1

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-372-1

NOV 1980 10X

FRAME 2 OF 2

ITEM NO.	QTY PER SHIP	JOB NO.	VALVE NO.	SIZE	MATERIAL	DESCRIPTION	CATALOG OR DWG. NO.	REQ. NO.	FITTING NO.	SIZE	TYPE	MATERIAL	SERVICE	ARRGT. DRWG. NO.	DETAIL DRAWING	LOCATION: PORT OR STBD	LOCATION: FRAME	LOCATION: ABOVE ℄	PIPING DIAGRAM REF. NO.	ITEM NO.
1	1	372	[illegible]	1½"	CHROME-MOLY STAIN. STL. TRIM	1500# FLGD., ANGLE STOP CHECK VALVE, F.F.D.	EDWARDS FIG. NO. 1047	505500		1½"	FLGD NOZZLE	STEEL PIPE	BOILER BLOW OVBD. DISCHARGE - PORT	M-4650-111-19	M4650-111-18	STB'D	BETWEEN FR. 175 & 176	15'-9"	1	1
2	1	372	[illegible]	1½"	CHROME-MOLY STAIN. STL. TRIM	1500# FLGD., ANGLE STOP CHECK VALVE; F.F.D.	EDWARDS FIG. NO. 1047	505500		1½"	FLGD NOZZLE	STEEL PIPE	BOILER BLOW OVBD. DISCHARGE - STBD.	M-4650-111-17	M4650-111-17	STB'D	BETWEEN FR. 175 & 176	15'-9"	1	2
3	1	372	[illegible]	4"	BRONZE MONEL TRIM	150# FLGD., GLOBE STOP-CHECK VALVE, F.F.D.; O.S.&Y. RISING STEM; W/BOLTED FLGD. YOKE BONNET	LUNKENHEIMER FIG. NO. 1400-X	504500-C		4"	FLGD NOZZLE	STEEL PIPE	DISTILLING PLANT SALT WATER OVBD. DISCH.	M-4650-111-16	M4650-111-16	PORT	BETWEEN FR. 163 & 162	16'-8"	2	3
4	1	372	[illegible]	5"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM, AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		5"	FLGD NOZZLE	STEEL PIPE	DISTILLING PLANT LOW SEA SUCTION	M-4650-111-16	H4650-372-1	PORT	BETWEEN FR. 160 & 161	6'-6"	2	4
5	1	372	G-101	38"	STEEL PLATE MONEL TRIM	150# FLGD., GATE VALVE, W/MONEL LINER, F.F.D.; O.S.&Y. RISING STEM; LIMITORQUE SMB MOTOR & OPERATOR	FABRI VALVE CO. DRWG. NO. AA-754	504600-A		38"	PAD	STEEL PIPE	MAIN CIRCULATING WATER INLET SCOOP	M-4650-111-15	H4650-372-2	STBD	BETWEEN FR. 160 & 162	7'-7½"	3	5
6	1	372	AS-113	1"	FORGED STEEL STAIN. STL. TRIM	150# FLGD., GLOBE VALVE; F.F.D.	LUNKENHEIMER FIG. NO. 1710-MOD	502200		1"	FLGD NOZZLE	STEEL PIPE	MAIN CIRCULATING WATER INLET SCOOP - STEAMING OUT	M-4650-111-15	H4650-372-2	STBD	BETWEEN FR. 159 & 160	APPROX. 8'-2⅛"	3	6
7																				7
8	1	372	[illegible]	30"	STEEL PLATE MONEL TRIM	150# FLGD., GATE VALVE, W/MONEL LINER, F.F.D.; O.S.&Y. RISING STEM; LIMITORQUE SMB MOTOR & OPERATOR	FABRI VALVE CO. DRWG. NO. AA-754	504600-A		30"	FLGD NOZZLE	STEEL PIPE	MAIN SEA CHEST HIGH SUCTION	M-4650-111-15	H4650-372-1	STBD	BETWEEN FR. 163 & 165	9'-0"	3	8
9	1	372	[illegible]	10"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM, AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		10"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE, FIRE TK. CLEANING & CLEAN BALLAST SYSTEM HIGH SEA SUCTION	M-4650-111-15	H4650-372-1	STBD	BETWEEN FR. 163 & 165	7'-4"	3	9
10	1	181	V-5	2½"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM	LUNKENHEIMER FIG. NO. 1404	503400-R		2½"	FLGD NOZZLE	STEEL PIPE	MAIN SEA CHEST HIGH SUCTION - VENT	M-4650-181-23	H4650-372-1	STBD	BETWEEN FR. 164 & 165	8'-8½"	3	10
11	1	372	AS-113	1"	FORGED STEEL STAIN. STL. TRIM	150# FLGD., GLOBE VALVE; F.F.D.	LUNKENHEIMER FIG. NO. 1710-MOD	502200		1"	FLGD NOZZLE	STEEL PIPE	MAIN SEA CHEST HIGH SUCTION - STEAMING OUT	M-4650-111-15	H4650-372-1	STBD	BETWEEN FR. 162 & 163	8'-7½"	3	11
12																				12
13	1	372	[illegible]	42"	STEEL PLATE MONEL TRIM	150# FLGD., GATE VALVE, W/MONEL LINER, F.F.D.; O.S.&Y. RISING STEM; LIMITORQUE SMB MOTOR & OPERATOR	FABRI VALVE CO. DRWG. NO. AA-754	504600-A		42"	FLGD NOZZLE	STEEL PIPE	MAIN CIRC. WATER OUTLET SCOOP	M-4650-111-16	M4650-111-16 H4650-372-2	PORT	BETWEEN FR. 166 & 169	11'-6¾"	3	13
14																				14
15	1	372	[illegible]	10"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM & ELECTRIC MOTOR OPERATED	LUNKENHEIMER FIG. NO. 1404	504600-C		10"	FLGD NOZZLE	STEEL PIPE	MAIN CONDENSER CIRC. WATER OVBD. DISC.	M-4650-111-16	M4650-111-16	PORT	BETWEEN FR. 165 & 166	15'-3"	3	15
16	1	372	[illegible]	8"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM & ELECTRIC MOTOR OPERATED	LUNKENHEIMER FIG. NO. 1404	504600-C		8"	FLGD NOZZLE	STEEL PIPE	LUBE OIL COOLER CIRC. WATER OVBD. DISCH.	M-4650-111-15	M4650-111-16	STBD	BETWEEN FR. 165 & 166	16'-10⅝"	3	16
17	1	372	[illegible]	10"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM, AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		10"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE, FIRE TK. CLEANING & CLEAN BALLAST SYSTEM LOW SEA SUCTION	M-4650-111-16	H4650-372-1	PORT	BETWEEN FR. 160 & 161	6'-6"	4	17
18	1	181	[illegible]	2½"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM	LUNKENHEIMER FIG. NO. 1404	503400-R		2½"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE LOW SUCTION SEA CHEST - VENT	M-4650-181-23	H4650-372-1	PORT	BETWEEN FR. 160 & 161	9'-10½"	4	18
19	1	372	AS-113	1"	FORGED STEEL STAIN. STL. TRIM	150# FLGD., GLOBE VALVE, F.F.D.	LUNKENHEIMER FIG. NO. 1710-MOD	502200		1"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE LOW SUCTION SEA CHEST - STEAMING OUT	M-4650-111-16	H4650-372-1	PORT	BETWEEN FR. 160 & 161	7'-9½"	4	19
20	1	372	[illegible]	1"	BRONZE MONEL TRIM	150# FLGD., GLOBE VALVE, F.F.D.	POWELL CO. FIG. 104	504500-K		1"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE & FIRE TANK CLEANING PUMP RECIRC.	M-4650-111-16	H4650-372-1	PORT	BETWEEN FR. 160 & 161	9'-10½"	4	20
21	1	372	[illegible]	8"	BRONZE BRONZE TRIM	150# FLGD., GLOBE STOP CHECK VALVE, F.F.D.; O.S.&Y. RISING STEM W/BOLTED FLGD. YOKE BONNET & AIR MOTOR OPERATOR	LUNKENHEIMER FIG. NO. 1400-X	[illegible]		8"	FLGD NOZZLE	STEEL PIPE	S.W. SERVICE & FIRE TANK CLEANING PUMP OVBD. DISCH.	M-4650-111-15	M4650-111-15	STBD	BETWEEN FR. 162 & 163	16'-4"	4	21
22	1	372	[illegible]	4"	BRONZE MONEL TRIM	150# FLGD., GLOBE STOP CHECK VALVE, F.F.D.; O.S.&Y. RISING STEM, W/BOLTED FLGD. YOKE BONNET	LUNKENHEIMER FIG. NO. 1400-X	504500		4"	FLGD NOZZLE	STEEL PIPE	MAIN VACUUM PUMP HEAT EXCHANGERS & T.G. AIR COOLERS OVBD. DISCH.	M-4650-111-16	M4650-111-16	PORT	BETWEEN FR. 163 & 162	16'-8"	4	22
23	1	372	[illegible]	6"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM, AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		6"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. HIGH SEA SUCTION	M-4650-111-17	H4650-372-3	STBD	BETWEEN FR. 181 & 182	10'-6"	4	23
24	1	181	V-4	2"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM	LUNKENHEIMER FIG. NO. 1404	502400-R		2"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. HIGH SEA SUCTION - VENT	M-4650-181-23	H4650-372-3	STBD	BETWEEN FR. 181 & 182	11'-8½"	4	24
25	1	372	AS-113	1"	FORGED STEEL STAIN. STL. TRIM	150# FLGD., GLOBE VALVE; F.F.D.	LUNKENHEIMER FIG. NO. 1710-MOD.	502200		1"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. HIGH SEA SUCTION - STEAMING OUT	M-4650-111-17	H4650-372-3	STBD	BETWEEN FR. 181 & 182	11'-8½"	4	25
26	1	372	[illegible]	6"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM, AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		6"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. LOW SEA SUCTION	M-4650-111-17	H4650-372-3	STBD	BETWEEN FR. 180 & 181	9'-11½"	4	26
27	1	181	V-4	2"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM	LUNKENHEIMER FIG. NO. 1404	503400-R		2"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. LOW SEA SUCTION - VENT	M-4650-181-23	H4650-372-3	STBD	BETWEEN FR. 180 & 181	12'-4½"	4	27
28	1	372	AS-113	1"	FORGED STEEL STAIN. STL. TRIM	150# FLGD., GLOBE VALVE, F.F.D.	LUNKENHEIMER FIG. NO. 1710-MOD.	502200		1"	FLGD NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. LOW SEA SUCTION - STEAMING OUT	M-4650-111-17	H4650-372-3	STBD	BETWEEN FR. 180 & 181	9'-11½"	4	28
29	1	372	[illegible]	6"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM, AIR MOTOR OPERATOR & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		6"	FLGD. NOZZLE	STEEL PIPE	SHIP SERV. DIESEL GEN. AIR COOLER & S.W. COOLER OVBD. DISCH.	M-4650-111-19	M-4650-111-18	PORT	BETWEEN FR. 181 & 182	10'-6"	4	29
30	1	372	[illegible]	10"	BRONZE MONEL TRIM	150# FLGD., GLOBE STOP-CHECK VALVE, F.F.D.; O.S.&Y. RISING STEM, W/BOLTED FLGD. YOKE BONNET	LUNKENHEIMER FIG. NO. 1400-X	504500		10"	FLGD NOZZLE	STEEL PIPE	SHIPS STORES AND CARGO REFRIGERATION CONDENSERS OVBD. DISCH.	M-4650-111-15	M4650-111-16	STBD	BETWEEN FR. 163 & 164	15'-11"	4	30
31	1	181	[illegible]	8"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM, AIR MOTOR OPERATOR, & POSITION IND. SWITCH	LUNKENHEIMER FIG. NO. 1404	503800		8"	FLGD NOZZLE	STEEL PIPE	FIRE PUMP SUCTION SEA CHEST	M-4650-111-28	H-4650-372-3	STBD	BETWEEN FR. 185 & 186	7'-6"	5	31
32	1	181	[illegible]	2½"	BRONZE MONEL TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D.; O.S.&Y. RISING STEM	LUNKENHEIMER FIG. NO. 1404	503400-R		2½"	FLGD NOZZLE	STEEL PIPE	FIRE PUMP SUCTION SEA CHEST - VENT	M-4650-181-23	H-4650-372-3	STBD	BETWEEN FR. 185 & 186	7'-0"	5	32
33	1	181	[illegible]	1"	BRONZE MONEL TRIM	150# FLGD., GLOBE VALVE; F.F.D.	POWELL FIG. NO. 104	504500		1"	FLGD NOZZLE	STEEL PIPE	FIRE PUMP SUCTION SEA CHEST RECIRC. FROM FIRE PUMP	M-4650-111-28	H-4650-372-3	STBD	BETWEEN FR. 185 & 186	7'-0"	5	33
34	1	372	AS-113	1"	FORGED STEEL STAIN. STL. TRIM	150# FLGD., GLOBE VALVE; F.F.D.	LUNKENHEIMER FIG. NO. 1710-MOD	502200		1"	FLGD NOZZLE	STEEL PIPE	FIRE PUMP SUCTION SEA CHEST - STEAMING OUT	M-4650-111-28	H-4650-372-3	STBD	BETWEEN FR. 185 & 186	7'-6"	5	34
35	1	181	V-4	5"	BRONZE BRONZE TRIM	150# FLGD., GLOBE STOP CHECK VALVE, F.F.D.; O.S.&Y. RISING STEM	LUNKENHEIMER FIG. NO. 1400-X	505400		5"	FLGD NOZZLE	STEEL PIPE	FWD. FIREMAIN EDUCTOR OVBD. DISC.	M-4650-181-1	M-4650-181-9	PORT	BETWEEN FR. 14 & 15	[illegible]	6	35
36																				36
37	1	181	[illegible]	8"	BRONZE BRONZE TRIM	150# FLGD., GLOBE STOP CHECK VALVE, F.F.D.; O.S.&Y. RISING STEM, W/BOLTED FLGD. YOKE BONNET & AIR MOTOR OPERATOR	LUNKENHEIMER FIG. NO. 1400-X	503800		8"	FLGD NOZZLE	STEEL PIPE	BILGE, BALLAST, & S.W. SERVICE PUMP OVBD. DISCH.	M-4650-111-16	M-4650-111-16	PORT	BETWEEN FR. 162 & 163	17'-1"	6	37
38	[illegible]	181	[illegible]	10"	CAST STEEL BRONZE TRIM	150# FLGD., HORIZONTAL SWING CHECK VALVE, F.F.D., WITH MONEL PINS	LUNKENHEIMER FIG. NO. 1572	503400		10"	FLGD NOZZLE	STEEL PIPE	FUEL OIL SERVICE TANKS OVERFLOW OVBD. DISCH. - PORT	M-4650-181-07-8	M-4650-181-07-8	PORT	BETWEEN FR. 154 & 156	46'-7"	7	38
39	[illegible]	181	[illegible]	10"	CAST STEEL BRONZE TRIM	150# FLGD., HORIZONTAL SWING CHECK VALVE, F.F.D., WITH MONEL PINS	LUNKENHEIMER FIG. NO. 1572	503400		10"	FLGD NOZZLE	STEEL PIPE	FUEL OIL SERVICE TANKS OVERFLOW OVBD. DISCH. - STBD.	M-4650-181-07-8	M-4650-181-07-8	STBD	BETWEEN FR. 154 & 156	45'-7"	7	39
40	[illegible]	181	[illegible]	2½"	BRONZE MONEL TRIM	150# FLGD., HORIZONTAL SWING CHECK VALVE, F.F.D., WITH MONEL PINS	LUNKENHEIMER FIG. NO. 1402	504500-H		2½"	FLGD NOZZLE	STEEL PIPE	AFT FIREMAIN & RUDDER TANKS EDUCTOR OVBD. DISCH.	M-4650-182-12-7	M-4650-182-12-7	PORT	BETWEEN FR. 233 & 234	31'-10"	6	40
41	[illegible]	181	[illegible]	10"	BRONZE MONEL TRIM	150# FLGD., HORIZONTAL SWING CHECK VALVE, F.F.D., WITH MONEL PINS	LUNKENHEIMER FIG. NO. 1402	504500-H		10"	FLGD NOZZLE	STEEL PIPE	PORT & STBD. HEELING TANKS OVERFLOW OVERBOARD DISCH.	M-4650-111-20	M-4650-111-20	PORT	BETWEEN FR. 165 & 161	34'-0"	8	41
42	[illegible]	[illegible]	[illegible]	1½"	BRONZE BRONZE TRIM	150# FLGD., HORIZONTAL SWING CHECK VALVE, F.F.D. WITH MONEL PINS	LUNKENHEIMER FIG. 596	505400-C		1½"	FLGD NOZZLE	STEEL PIPE	BOS'N STORES SUMPS OVERBOARD DISCHARGE	M-4650-181-7	M-4650-181-7	PORT	BETWEEN FRS. 14 & 15	44'-6"	6	42
43	[illegible]	[illegible]	[illegible]	2½"	BRONZE BRONZE TRIM	150# FLGD., HORIZONTAL SWING CHECK VALVE, F.F.D. WITH MONEL PINS	LUNKENHEIMER FIG. 1402	508500		2½"	FLGD NOZZLE	STEEL PIPE	FREON RELIEF OVERBOARD DISCHARGE CARGO REFRIGERATOR	M-4650-402-3	M-4650-402-3	PORT	BETWEEN FRS. 11 & 12	37'-3"	9	43
44	[illegible]	[illegible]	[illegible]	6"	CAST BRONZE BRONZE TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D. OUTSIDE SCREW & YOKE - RISING STEM	PIMA FIG. B102-A	503100-C		6"	FLGD NOZZLE	STEEL PIPE	WATER CLOSET & MISC. DRAINS OVERBOARD DISCHARGE	M-4650-111-17	M-4650-111-17	STBD	BETWEEN FRS. 174 & 175	17'-6"	10	44
45	[illegible]	[illegible]	[illegible]	2½"	CAST BRONZE BRONZE TRIM	150# FLGD., SOLID WEDGE DISC. GATE VALVE, F.F.D. OUTSIDE SCREW & YOKE - RISING STEM	PIMA FIG. B102-A	503100-C		2½"	FLGD. NOZZLE	STEEL PIPE	SEWAGE PLANT OVERBOARD DISCHARGE	M-4650-111-17	M-4650-111-17	STBD	BETWEEN FRS. 176 & 177	17'-6"	10	45
46	1	[illegible]	[illegible]	4"	CAST BRONZE BRONZE TRIM	150# FLGD., SOLID WEDGE DISC., GATE VALVE, F.F.D., OUTSIDE SCREW & YOKE - RISING STEM.	PIMA FIG. B102-A	508100C		4"	FLGD NOZZLE	STEEL PIPE	SEWAGE EXPULSOR DISCHARGE	M-4650-111-16	M-4650-111-16	PORT	BETWEEN FRS. 169 & 170	17'-6"	10	46
47	1	[illegible]	[illegible]	1"	BRONZE BRONZE TRIM	150# FLGD., HORIZONTAL SWING CHECK VALVE, F.F.D., WITH MONEL PINS	LUNKENHEIMER FIG. 596	508500-A		1"	SCR'D NOZZLE	STEEL PIPE	FREON OVERBOARD DISCHARGE SHIPS STORES	M4650-402-1-2	M4650-402-1-2	STBD	BETWEEN FRS. 169 & 170	38'-5"	11 & 12	47
48	1	181	B-138	2"	CAST STEEL BRONZE TRIM	150# FLGD., SOLID WEDGE DISC, GATE VALVE, F.F.D. OUTSIDE SCREW & YOKE - RISING STEM	POWELL FIG. 1503 FE	504500-R		2"	FLGD. NOZZLE	STEEL PIPE	HEELING TRANSFER PUMP OVERBOARD DISCHARGE	M-4650-111-16	M-4650-111-16	PORT	BETWEEN FR. 162 & 163	17'-9"	4	48
49																				49
50																				50
51																				51
52																				52
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69																				69
70																				70

GENERAL NOTES

1. SEA VALVES ARE NOT TO BE ORDERED FROM THIS DRAWING BUT ARE TO BE ORDERED FROM THE SYSTEM INVOLVED.

NO.	PLAN NO.	TITLE
12	YORK DWG-076-04147E	A.C. PLANT REFRIGERANT PIPING DIAGRAM
11	YORK DWG-076-04380E	S.S. PLANT REFRIGERANT PIPING DIAGRAM
10	4650-111-20-42	SEWAGE DISPOSAL SYSTEM
9	4650-111-20-36	CARGO REFRIGERATION SYSTEM
8	4650-111-20-56	HEELING TANK TRANSFER & CONTROL SYSTEMS
7	4650-111-20-62	FUEL OIL FILLING TRANSFER & PURIFYING SYSTEM
6	4650-111-20-54	BILGE & CLEAN BALLAST SYSTEMS
5	4650-111-20-50	FIREMAIN SYSTEM
4	4650-111-20-46	SALT WATER SERVICE SYSTEM
3	4650-111-20-45	MAIN SALT WATER CIRCULATING SYSTEM
2	4650-111-20-39	LOW PRESSURE DISTILLING PLANT SYSTEM
1	4650-111-20-17	SAFETY & RELIEF VALVE ESCAPE SYSTEM

REFERENCE PLANS

HULL	4650-5
APPROVED BY	DATE
OWNERS	
A.B.S.	
U.S.C.G.	
LLOYD'S R.S.	
U.S.P.H.S.	

NO. DATE ZONE

HULL

BETHLE

SCALE
DRAWN
TRACED
CHECKED

PLAN NO. M

LIS

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-2

FRAME 1 OF 1

ITEM	AMOUNT	SIZE	KEEPER CHAIN	WHERE USED (SERVICE)	DECK LEVEL	FRAME	P OR S	SPACE	VALVE NO.	REMARKS	INSCRIPTION	NO. OF TAGS	NO. OF KEYS	JOB NO.	REFERENCE DWG. NO.
⚠ 1	1	4"		EXH. STM. SYS. DISTILLING PLANT	36'-0" FLAT	167-168	P	MACH. SPACE	E-103	LOCKED CLOSED	EXH. STM. TO DIST. PLANT	2	2	371	M-4650-111-24
2	1	¾"		BOILER BLOW OVERBD. DISCH. DRAIN TO BILGE	LOWER LEVEL	173-174	P	MACH. SPACE	W-137		BOILER BLOW DRAIN TO BILGE			372	M-4650-111-18
3	1	¾"				175-176	S		W-137					372	-111-17
4	1	2½"		RES. FEED DIST. WTR. TANK FILLING	MAIN DECK	171-172	P	ENGINE CASING	AW-106		DIST. WTR. TANK FILLING			372	-111-27
5	2	2"		RES. FEED DIST. WTR. TANK DRAIN	LOWER LEVEL	180-181	P/S	MACH. SPACE	AW-112		DIST. WTR. TANK DRAIN			372	-181-6
6	2	2"		TANK HEATING COILS & STEAMING OUT SYS.	2ND DK	37-38	P/S	NO 2 TK.	V-3	LOCKED OPEN	TK. HEAT. COILS & STM. OUT			375	-375-05-8
7	2	2"				68-69	P/S	NO 6 TK	V-3					375	-375-05-8
8	2	1½"				99-100	P/S	NO 9 TK	V-3					375	-375-05-7
9	2	1½"				114,10-114,11	P/S	NO 10 A TK	V-3					375	-375-05-7
10	2	1½"				136-137	P/S	NO 14 TK	V-3					375	-375-05-7
11	1	2"		POTABLE WAT. TANK FILLING	2ND DK	170-171	S	MACH. SPACE	PW-29	LOCKED CLOSED	POT. WAT. TK. FILLING			181	-111-21
12	1	2"				172-173	P	MACH. SPACE	PW-29					181	-111-22
13	1	1½"		POTABLE WAT. TANK DRAIN	LOWER LEVEL	183-184	S	MACH. SPACE	PW-4		POT. WAT. TK. DRAIN			181	-111-17
14	1	1½"				183-184	P	MACH. SPACE	PW-4					181	-111-18
15	1	1"		EMER. SUP. TO RES. DIST. WTR. TANKS	28'-0" LEVEL	179-180	P	MACH. SPACE	PW-11		EMER. SUP. TO RES. DIST. WTR.			181	-111-22
16	1	2½"		FIREMAIN TO FIRE STATION #8	MAIN DECK	21-22	P	[illegible]	V-6	LOCKED OPEN	FIREMAIN TO FIRE STA. #8			182	-182-12-6
17	1	1½"		FOC'SLE. DECK WASHDOWN	MAIN DECK	20-21	S	[illegible] STORES	V-8		FOC'SLE DK WASHDOWN				-182-12-6
18	1	3"		TO FIRE STATION #10 & #11	2ND DK	45-46	S	PASSAGE	V-1		TO STA. #10 & #11				-182-12-6
19	1	8"	SEE NOTE NO. 1	BLOCK VALVE	2ND DK	59-60	S	PASSAGE	V-3		BLOCK VALVE				-182-12-4
20	1	2½"		TO FIRE STATION #12	2ND DK	62-63	S	PASSAGE	V-4		TO STA. #12				-182-12-4
21	1	4"		TO FIRE STATION #13 & #14	2ND DK	75-76	S	PASSAGE	V-5		TO STA. #13 & #14				-182-12-4
22	1	2½"		TO FIRE STATION # 14	2ND DK	90-91	S	PASSAGE	V-4		TO STA. # 14				-182-12-4
23	1	8"		BLOCK VALVE	2ND DK	100-101	S	PASSAGE	V-3		BLOCK VALVE				-182-12-4
24	1	4"		TO FIRE STATION #15 & 16-A	2ND DK	109-110	S	PASSAGE	V-5		TO STA. #15 & 16A				-182-12-4
25	1	2½"		TO FIRE STATION #15-A	2ND DK	114,5-114,6	S	PASSAGE	V-4		TO STA. #15-A				-182-12-4
26	1	3"		TO FIRE STATION #15B & 16B	2ND DK	[illegible]	S	PASSAGE	V-1		TO STA. #15B & 16B				-182-12-4
27	1	3"		TO FIRE STATION #15-C	2ND DK	114,43-114,46	S	PASSAGE	V-1		TO STA. #15-C				-182-12-4
28	1	8"		BLOCK VALVE	2ND DK	116-117	S	PASSAGE	V-3		BLOCK VALVE				-182-12-4
29	1	2½"		TO FIRE STATION #16	2ND DK	125-126	S	PASSAGE	V-4		TO STA. #16				-182-12-4
30	1	3"		TO FIRE STATION #17 & 18A	2ND DK	135-136	S	PASSAGE	V-1		TO STA. #17 & 18A				-182-12-4
31	1	2½"		TO FIRE STATION #18	2ND DK	151-152	S	PASSAGE	V-4		TO STA. # 18				-182-12-4
32	1	8"		MACH'Y. SPACE	26'-0" LEVEL	166-167	S	MACH. SPACE	F-105		MACH'Y. SPACE				-111-19
33	1	8"		ENGINE CASING	2ND DK	170-171	S	ENGINE CASING	F-105		ENG. CASING				-111-27
34	1	8"		ENGINE CASING	2ND DK	172-173	S	ENGINE CASING	F-105		ENG. CASING				-111-27
35	1	6"		SUPPLY ABOVE	2ND DK	171-172	S	ENGINE CASING	F-106		SUPPLY ABOVE				-111-27
36	1	4"		EMER. S.W. SUPPLY	2ND DK	171-172	S	ENGINE CASING	F-108		EMER. S.W. SUPPLY				-111-27
37	1	3"		ESCAPE TRUNK	38'-0" FLAT	214-215	S	ESCAPE TRUNK	F-110		STEERING GR. RM.				-182-12-7
38	1	3"		ENGINE CASING	MAIN DECK	174-175	S	ENGINE CASING	F-110		ENGINE CASING				-111-27
39	1	3"		ENGINE CASING	MAIN DECK	175-176	S	ENGINE CASING	F-110		ENGINE CASING				-111-27
40	1	2½"		IN QUARTERS	SUN DECK	172-173	S	[illegible]	V-3		IN QUARTERS				-182-12-2
41	1	1½"		L.O. COALESCER SUCT. FROM TURBO GEN.	26'-0" LEVEL	164-165	P	MACH. SPACE	L-129	LOCKED CLOSED	L.O. COALESCER SUCT. T/G.			373	-111-16
42	1	1½"		L.O. FILLING TURBO-GEN. SUMP	26'-0" LEVEL	164-165	P	MACH. SPACE	L-129		L.O. FILL. TURBO-GEN. SUMP				-111-20
43	1	¾"		WATER DRAIN OFF & TEST CONN.	LOWER LEVEL	168-169	S	LOWER ENG. RM.	L-109		WAT. DR. OFF & TEST CONN.				-111-17
44	1	¾"		DRIP PAN DRAIN & FOR FILL OIL CANS.	LOWER LEVEL	169-170	S	LOWER ENG. RM.	L-109		DRIP PAN DRAIN & FILL OIL CANS				-111-17
45	1	¾"		LUBE OIL COOLER DRAIN	LOWER LEVEL	168-169	S	LOWER ENG. RM.	L-109		LUBE OIL COOLER DRAIN				-111-15
46	2	¾"		MAGNETIC DUPLEX STRAINER DRAIN	17'-6" LEVEL	166-168	S	LOWER ENG. RM.	L-109		MAG. DUP. STRAINER DRAIN				-111-15
47	1	1½"		DIESEL GEN. L.O. STORAGE TK. DRAIN	38'-0" FLAT	180-181	P	LOWER ENG. RM.	L-138		DIESEL GEN. L.O. STOR. TK. DR.				-111-18

:NOTES:

1. HULL DEPT. TO ORDER 110 FT. PER SHIP OF #4/0-7/32 GALV. ELWELL PASSING LINK CHAIN, LENGTH OF CHAIN TO BE CUT TO SUIT CONDITIONS ON SHIP.
2. ALL MATERIAL ON THIS PLAN TO BE ORDERED BY HULL DEPT. ON H-4650-141-00-02
3. THIS LIST DOES NOT INCLUDE SPECIAL LOCKS FURNISHED WITH MAIN REDUCTION GEARS, BOILERS, ETC. BY THE VENDORS.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	7/13/78	2 & 3	1- REVISED ITEM 1 TO READ "EXH" STEAM IN LIEU OF "EXT", IN ACCORDANCE WITH G.G. SHARP, INC. LETTER 5587/512 DATED 5 JULY 1978.	JJR	

HULL	DESIGN	CHARGE
4651	↑	↑
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE MAY 31, 1978
DRAWN F.J. DUERBECK
APPROVED
TRACED
APPROVED
CHECKED JEH
APPROVED WBK

PLAN NO. M-4650-372-2
ALT. NO. 1

ENGINEERS LOCK LIST

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-5-78				
A.B.S.	╳				
U.S.C.G.	╳				
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				

NO.	PLAN NO.	TITLE

REFERENCE PLANS

		DATE OF ISSUE
		4650-51
	ALTERATION	0
	ENGINEERING DISTRIBUTION	6-1-78
MAIL	OWNERS	
MAIL	AMERICAN BUREAU	
MAIL	LLOYD'S R.S.	
MAIL	U.S.M.A.	
MAIL	U.S. NAVY	
MAIL	U.S.C.G.	
MAIL	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	
INSPECTION	AM. BU. INSP.	
INSPECTION	LLOYD'S INSP.	
INSPECTION	U.S.M.A. INSP.	
INSPECTION	U.S. NAVY INSP.	
INSPECTION	U.S.C.G. INSP.	
OFFICE	HULL DRAFT. - 21	1
OFFICE	MACH. DRAFT. - 22	2
OFFICE	ELEC. DRAFT. - 23	1
OFFICE	OUTFIT. DRAFT. - 25	
OFFICE	ESTIMATING	
MISC.	[illegible] - CTD	1
MISC.	PRODUCTION (SCD)	
MISC.	ORDER DEPT.	
MISC.	JOINER CONT. YARD	
MISC.	[illegible]	2
	TOTAL ENG'R. DIST.	
	YARD DISTRIBUTION	
YARD	[illegible] OFFICE	1
YARD	SHIP SUPT.	1
YARD	PIECE RATE - 11	1
YARD	TEST DEPARTMENT	
YARD	QUALITY ASSURANCE	1
YARD	[illegible] PLANNING	1
STRUCTURAL	GROUND ASSEMBLY	2
STRUCTURAL	35 DEPT.	2
STRUCTURAL	B. McNAIR	1
STRUCTURAL	H. LEVY	1
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	STRUCT. SUPER.	
STRUCTURAL	OPTICAL DETAIL - 46	2
STRUCTURAL	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP - 52	
MACH'Y & OUTFIT.	OUTFIT. #1 PIER	1
MACH'Y & OUTFIT.	PIPE DRAFT - 52	2
MACH'Y & OUTFIT.	BOILER SHOP - 58	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60	2
MACH'Y & OUTFIT.	O-MAT'L	2
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70	
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74	
MACH'Y & OUTFIT.	COPPER SHOP - 51	
MACH'Y & OUTFIT.	PAINT SHOP - 75	1
MACH'Y & OUTFIT.	WELDING	
OTHER	MOLD LOFT - 41	1
OTHER	BRACKET SHOP	
	TOTAL YARD DIST.	

M-717

7.5 SQ. FT.

M-4650-372-2 ENGINEERS LOCK LIST

LIST OF PIPES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
[illegible]			C-1			15'-0"	42"	—	.313	5#	75°	—	90-10 COPPER-NICKEL (SEE GEN. NOTE #1)	—	MAIN CIRCULATING WATER OVERBOARD			
[illegible]			C-2			10'-0"	34"	—	.284			—	WELDED	B-467 ALLOY 706	PUMP DISCH.			Nº 132
			C-3			13'-0"	10"	—	.187			—			HIGH OVERBOARD DISCH.			
			C-4			18'-0"	8"	—	.148			—			TO LUBE OIL COOLER			
		3	C-5			110'-0"	[illegible]	—	.083			—	SEAMLESS	B-466	VENT			
		3	C-6			1'-0"	1"	—	.065			—						
[illegible]		4	C-7		22'-0"	22'-0"	3/4"	STD.	.113			B36.10	STEEL - GALV.	A53, GR.B, TY.S				Nºs 128 & 135
[illegible]			C-8			10'-0"	3/4"	—	.065			—	90-10 COPPER NICKEL	B-466 ALLOY 706				132
[illegible]		2	C-9			3'-0"	8"	120	.719			B36.10	STEEL - WELDED	A53 GR.B, TY. E				128 & 135
[illegible]		2	C-10			3'-0"	10"	120	.844									128 & 135
[illegible]		2	C-11			[illegible]	6"	—	.134			—	90-10 COPPER NICKEL WELDED	B467 ALLOY 706				Nos 132
[illegible]		3	C-12			40'	1/2"	—	.065			—	SEAMLESS	B-466 ALLOY 706				
FITTINGS		5	C-13	4'-0"		4'-0"	1 1/2"	40	.145			B36.10	STEEL-WELDED	A-53 GR.B TY. E	INTERLOCK (SEE DET. 3-A M-4650-111-15)			Nos 128 & 135
		5	C-14	4'-0"		4'-0"	2"	80										

GENERAL NOTES

⚠1. PIPE C-1 (42") TO BE ROLLED FROM 90-10 COPPER NICKEL PLATE TO MIL-15726-E. PLATE SIZE 15'-0" x 11'-2" x .313" THK.

LIST OF VALVES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS. STD.	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO.
[illegible]			C-100	1	42"	5#	75°	150#	—	STL. & MONEL	A285-GR.B/C	MONEL	MONEL	MONEL	—	FLANGED, F.D.	B16.5	GATE VALVE W/MTR. OPERATOR	Nº 96	FABRI VALVE CO. DWG. AA-754
			C-101	1	38"				—						—					
[illegible]			C-102	1	42x38			50#	—	BRONZE	B61			—	MONEL			CHECK VALVE (TILTED DISC)		ANCHOR DWG. FR 2935-S
[illegible]			C-103	1	32x34				—					—						M48-66-102
[illegible]			C-104	1	30"			150#	—	STL. & MONEL	A-285 GR.B/C			MONEL	—			GATE VALVE W/MTR. OPERATOR		FABRI VALVE CO. DWG. AA-754
[illegible]			C-105	1	10"				—	BRONZE	B61	MONEL	MONEL	MONEL	—	FLANGED, F.D.	B16.24			LUNK'NH'M'R. FIG. 1403-MOD.
[illegible]			C-106	2	2"				—						—			GLOBE VALVE	Nºs 1,90,91,92,93	POWELL FIG. 104
			C-107	2	8"				—						—			GATE VALVE	2,6,90,91,92,93	LUNK'NH'M'R. FIG. 1404
			C-108	3	1 1/2"				—						—	HOSE THD. INLET x FLGD. OUTLET	B24/B16.24	GLOBE HOSE VALVE W/CAP & CHAIN	1,38,90,91,92,93	POWELL FIG. 104-MOD.
[illegible]			C-109	1	8"				—						—	FLANGED, F.D.	B16.24	GATE VALVE W/MTR. OPERATOR	96	LUNK'NH'M'R. FIG. 1404-MOD.
			C-110	1	6"				—						—			GATE VALVE	2,6,90,91,92,93	FIG. 1404
			C-111	3	2"				—						—			- RISING STEM	1,90,91,92,93	2229
			C-112	2	1"				—			BRONZE	BRONZE	BRONZE	—			GLOBE VALVE	1,90,91,92,93	POWELL FIG. 111
[illegible]			C-113	1	1"			200#	—			MONEL	MONEL	MONEL	—	SIL. BRZ.	—	- UNION END	1,28,90,91,92,93	LUNK'NH'M'R. FIG. 2100
			C-114	1	3/4"				—						—		—		1,28,90,91,92,93	
			C-115	1	1"				—			BRONZE	BRONZE	BRONZE	—	HOSE THD. INLET x SCRD. OUTLET	B24/B21	GLOBE STOP-CHECK HOSE VLV. W/CAP & CHAIN	1,39,90,91,92,93	POWELL FIG. 134 MOD.
[illegible]			C-116	[illegible]	1/2"				—			MONEL	MONEL	MONEL	—	SIL. BRZ.	—	GLOBE VALVE - UNION END	1,28,90,91,92,93	LUNK'NH'M'R. FIG. 2100

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	1-13-77		1. REVISED QTY. OF IT. C-1 FROM 7'-0" TO 15'-0" C-2 FROM 7'-0" TO 14'-0". 2. REVISED GEN. NOTE #1 3. DELETED VALVES C-112	LPK	[illegible]
2	6/16/77		1. ADDED C-11 (6") 2. DELETED C-108 3. REMOVED RES. AGAINST C-113 4. C-9 & C-10 CHG'D FROM EXHVY TO SCH 120	AG	[illegible]
3	9-14-77		1. DELETED ITEM C-6 2. REVISED QTY. OF ITEM C-5 FROM 115' TO 110' 3. ADDED ITEM C-12	LPK	[illegible]
4	6-28-78		1. INCR. QTY. OF C-116 (4-5) 2. DECR. QTY. OF C-7 (70'-6" - 20'-0")	PCG	[illegible]
5	12-28-78		1. ADDED ITEMS C-13 & C-14	LPK	[illegible]

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT. CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE —
DATE AUG. 21 1976
DRAWN L.P.K.
APPROVED
TRACED
APPROVED
CHECKED [illegible]
APPROVED

PLAN NO. M-4650-372-02-1
ALT. NO. 5

PIPE & VALVE LIST FOR MAIN & AUX. CIRC. WATER PIPING

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	9-15-77				
U.S.C.G.					
LLOYD'S F.S.					
U.S.P.H.S.					

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

DATE OF ISSUE
ALTERATION 1 2 3 4 5
ENGINEERING DISTRIBUTION
MAIL: OWNERS; AMERICAN BUREAU; LLOYD'S R.S.; U.S.M.A.; U.S. NAVY; U.S.C.G.; JOINER CONT'R.
INSPECTION: OWNER'S INSP.; AM. BU. INSP.; LLOYD'S INSP.; U.S.M.A. INSP.; U.S. NAVY INSP.; U.S.C.G. INSP.
OFFICE: HULL DRAFT - 21; MACH. DRAFT - 22; ELEC. DRAFT - 23; OUTFIT DRAFT - 25; ESTIMATING; J. DOUGHERTY (CTS)
MISC.: PRODUCTION (SCO); ORDER DEPT.; JOINER CONT. YARD
TOTAL ENG'R. DIST.
YARD DISTRIBUTION
YARD: J. SIMMONS; PIECE RATE - 11; TEST DEPARTMENT; MACH. PLANNING
STRUCTURAL: GROUND ASSEMBLY; F. McNAIR; H. LEVY; NO. WAY; NO. WAY; NO. WAY; NO. WAY; STRUCT. SUPER.; OPTICAL DETAIL - 45; WET DOCK
MACH'Y & OUTFIT.: PIPE SHOP - 52; OUTFIT #1 PIER; PIPE DRAFT - 52; BOILER SHOP - 58; OUTSIDE MACH. - 60; ELECTRIC SHOP - 70; SHEET MET. SHOP - 74; COPPER SHOP - 51; PAINT SHOP - 75
OTHER: WELDING; MOLD LOFT - 41; BRACKET SHOP; R. MILLER
TOTAL YARD DIST.

M-718

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-1

FRAME 2 OF 2

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF PIPES

UNIT #1	UNIT #2	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH NO.	WALL THK	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	
15'0"		504640	504640-A			1	C-1			15'-0	42"	—	.313	5#	75°	—	90-10 COPPER-NICKEL (SEE GEN NOTE #1)	—	MAIN CIRCULATING WA
14'0"		504652	504652-A			1	C-2			14'-0"	34"	—	.284			—	WELDED	B-467 ALLOY 706	
	10'						C-3			13'-0"	10"	—	.187			—			
18'0"							C-4			18'-0"	8"	—	.148			—			
20'	50'	↓				5	C-5			110'-0	2"	—	.083			—	SEAMLESS	B-466	
						6	C-6			1'0"	1"	—	.065			—			
	20'	504644				4	C-7		20'-0"	20'-0"	3/4"	STD.	.113			B36.10	STEEL - GALV.	A53 GR.B TY.S	
	10'	504652					C-8			10'-0"	3/4"	—	.065			—	90-10 COPPER NICKEL	B466 ALLOY 706	
3'0"		504644-B				2	C-9			3'-0"	8"	120	.719			B36.10	STEEL - WELDED	A53 GR.B TY.E	
	3'0"	504644-B				2	C-10			3'-0"	10"	120	.844						
1'-0"		504652-B				2	C-11			1'-0"	6"	-	.134			-	90-10 COPPER NICKEL WELDED	B467 ALLOY 706	
40'		504652-B				3	C-12			40'	1/2"	-	.065			-	SEAMLESS	B466 ALLOY 706	
4'0"		CUTTINGS				5	C-13	4'-0"		4'-0"	1 1/2"	40	.145			B36.10	STEEL-WELDED	A53 GR.B TY.E	
4'0"		↓				6	C-14	4'-0"		4'-0"	2"	80							

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF VALVES

UNIT #1	UNIT #2	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D	END PIPE	ANSI DIM STD	
	1	504600-A	—				C-100	1	42"	5#	75°	150#	—	STL & MONEL	A285-GR.B/C	MONEL	MONEL	MONEL	—	FLANGED,F.F.D.	B16.5	GATE
1		↓	—				C-101	1	38"			↓	—	↓	↓				—			↓
1		504600-B	—				C-102	1	42x38"			50#	—	BRONZE	B61			—	MONEL			
1		504600-B	—				C-103	1	32x34"			↓	—	↓				—				CHECK
1		504600-A	—				C-104	1	30"			150#	—	STL & MONEL	A-285 GR.B/C			MONEL	—			GATE
	1	504600-C	—				C-105	1	10"				—	BRONZE	B61	MONEL	MONEL	MONEL	—	FLANGED,F.F.D.	B16.24	
1	1	504600					C-106	2	2"				—						—			
2		↓					C-107	2	8"				—						—			GLOBE
						2	C-108	3	1 1/2"				—						—			GATE
1		504600-C	—				C-109	1	8"				—						—	[illegible] x [illegible]	B24/B16.24	GLOBE
1		504600					C-110	1	6"				—						—	FLANGED, F.F.D.	B16.24	GATE V
2	1	↓					C-111	3	2"				—						—			GATE V
						1	C-112	2	1"			↓	—			BRONZE	BRONZE	BRONZE	—			
1		504600-D				2	C-113	1	1"			200#	—			MONEL	MONEL	MONEL	—	SIL BRZ	—	GLOBE
1		504600					C-114	1	3/4"				—						—		—	
1		↓					C-115	1	1"				—			BRONZE	BRONZE	BRONZE	—	[illegible] x [illegible]	B24/B21	GLOBE
5		↓	504600-E			4	C-116	5	1/2"	↓	↓	↓	—	↓	↓	MONEL	MONEL	MONEL	—	SIL BRZ		GLOBE

LIST OF FLANGES

REQUISITION NO.	ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF#1	CAT. OR DRWG. NO.
		C-200	2	42"	30#	75°		125#	—	CARB. STL. FORG.	A105	125# SLIP-ON-WELDED ANSI TYPE FLAT FACE F.F.D.	MAIN COND. TO MN. CIRC SCOOPS		SEE GEN. NOTE #1 SEE NOTES 90-93	TUBE TURN PART 711
		C-201	2	34"	↓	↓		↓	—	↓	↓	↓	MN. CIRC. PUMP		SEE GEN. NOTE #1 SEE NOTES 90-93	↓
		C-202	5	10"				150#	B16.5			150# SLIP-ON-WELDED FLAT FACED F.F.D	HIGH OVBD DISC		SEE NOTES 90-93	TUBE TURN PART 50
	1	C-203	7	8"								↓	L.O. COOLER & L.O. OVBD.			
	1	C-204	4	6"					↓	↓	↓	↓	LUBE OIL COOLER			↓
	2	C-205	6	2"					B16.24	CAST BRONZE	B62	150# SIL-BRAZ F.F.D.	CIRCULATING WATER		↓	FLAGG FIG. 5070
	2	C-206	1	1"					↓	↓	↓	↓	↓			↓
	3	C-207	1	[illegible]	↓	↓		↓	B16.5	CARB. STL. FORG.	A105	150# REDUCING SOCKET WELD FLAT FACE (BORE FOR [illegible])	↓		↓	TUBE TURN PT. 150-MOD.

GENERAL NOTES

1. FLANGES ARE TO BE MONEL FACED IN ACCORDANCE WITH SKETCH 14 ON REFERENCE 2.

LIST OF GASKETS

REQUISITION NO.	ALT. NO.	GASKET IDENT. NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
		C-300	3	42"	30#	75°		125#	B16.21	CLOTH INSERTED [illegible] RUBBER	D-2000 GR-AA-[illegible]	FULL FACE 1/8" THICK	CIRC. WATER		NOTE #151 REF#1	JOHNS-MANVILLE #109
		C-301	1	38"					—						#149	
		C-302	2	34"					—						#153	
		C-303	2	30"				↓	B16.21						#148	
		C-304	5	10"				150#								
	1	C-305	7	8"												
	1	C-306	4	6"												
		C-307	9	2"	↓	↓		↓	↓	↓	↓	↓	↓			↓
	3	C-308	2	[illegible]	↓	↓		↓	↓	↓	↓	↓	↓			↓

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.	ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	SERVICE	CODE NO.	REMARKS
	1	C-400	180								30#	75°	CARBON STL HEAVY HEX HEAD A-307 GR.B GALV.	1½"	7"	B18.2.1 B1.1 UNC 2-A	CARBON STL HEAVY HEX HEAD A-307 GR.B GALV. SEMI-FINISHED	1½"	B18.2.2 B1.1 UNC-2B	42" FLGS, VALVES & EXP JOINT		
	1	C-401	32												6¾"					38" VALVE & INLET SCOOP FLG		
		C-402	32												6½"					34" VALVE & 34" FLG		
		C-403	36												6¼"					CONDENSER & 42" FLG		
	2	C-404	32												6					↓ , VALVES & EXP. JOINTS		
	1	C-405	34												5¾"					VALVES & EXP JOINTS		
		C-406	36											↓	5¼			↓		CONDENSER & VALVES		
		C-407	56											1¼"	6"			1¼"		SEA CHEST - VALVE - CIRC PUMP (IN)		
		C-408	24											1¼"	5¼"			1¼"		CIRC PUMP - VALVE (OUT)		
	2	C-409	6											1"	2"			1"		L.O. COOLER CRADLE		
		C-410	60											7/8"	3¾"			7/8"		10" FLGS & VALVES		
	1	C-411	56											3/4"	3½"			3/4"		8" FLGS & VALVES		
		C-412	24											3/4"	3¼"			3/4"		6"		
	1	C-413	28											5/8"	2"			5/8"		2"		
	3	C-414	8								↓	↓	↓	1/2"	1¾"	↓	↓	1/2"	↓	1"		

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	6-16-77		1. REVISED QTY OF THE FOLOWING: C-203 CHG'D FROM 6 TO 7 C-204 ↓ 3 ↓ 4 C-305 6 7 C-306 3 4 C-400 108 180 C-405 60 84 C-411 48 56 C-413 ↓ 20 ↓ 28 C-400 SERV. COL DELET INDICATED 38" C-401 SERV. COL CHG'D INDICATED 42" TO 38"	AG AG	G.G. SHARP LTR. DATED 5-17-77
2	11-15-77		1. DELETED ITEMS C-206, C-409 & C-406 2. REVISED QTY. OF ITEM C-205 FROM 5 TO 6 C-404 FROM 68 TO 32 C-408 FROM 26 TO 24	LRK	[illegible]
3	3-28-78		1. DELETED C-207, C-308 & C-414.	RHM	3-31-78 [illegible]

HULL	DESIGN	CHARGE
4651	↓	↓
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE SEPT. 24, 1976
DRAWN WE
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-372-02-2
ALT. NO. 3

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR MAIN & AUX. CIRC. WATER PIPING

APPROVAL LETTERS					
HULL	4650	4651			
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	9-15-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

UAO-50140-A

REFERENCE PLANS

NO.	PLAN NO.	TITLE
4	M-4650-372-02-3	LIST OF FITTINGS ↓ ↓ ↓ ↓
3	M-4650-372-02-1	LIST OF PIPE & VALVES FOR MN. CIRC. WATER
2	EF-494	FAB. & WELDING DETAILS (CLASS II PIPING)
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

M-719

4650-51
4650-51
4650-51 REL.

	DATE OF ISSUE			
ALTERATION	0	1	2	3
ENGINEERING DISTRIBUTION	11-15-77	6-17-77	11-23-77	3-31-78
OWNERS				
AMERICAN BUREAU				
LLOYD'S R.S.				
U.S.M.A.				
U.S. NAVY				
U.S.C.G.				
JOINER CONT'R.				
OWNER'S INSP.		1	1	1
AM. BU. INSP.				
LLOYD'S INSP.				
U.S.M.A. INSP.		1	1	1
U.S. NAVY INSP.				
U.S.C.G. INSP.				
HULL DRAFT.-21	1	1	1	1
MACH. DRAFT.-22	2	2	2	2
ELEC. DRAFT.-23	1	1	1	1
OUTFIT. DRAFT.-25				
ESTIMATING				
J. DOUGHERTY (C10)	1	1	1	1
PRODUCTION (BCD)				
ORDER DEPT.				
JOINER CONT. YARD				
[illegible]	2			
TOTAL ENG'R. DIST.	[illegible]	7	11	10
YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1	1	1	1
[illegible]	1	1	1	1
PIECE RATE - 11	1	1	1	1
TEST DEPARTMENT				
[illegible]	1	1	1	1
[illegible] PLANNING	1	1	1	1
GROUND ASSEMBLY	2	2	2	
[illegible]	2	2	2	
[illegible]	1	1	1	1
[illegible]	1	1	1	1
NO. WAY				
NO. WAY				
NO. WAY				
NO. WAY				
STRUCT. SUPER.	2	2	2	
OPTICAL DETAIL-46	2	2	2	
WET DOCK				
PIPE SHOP - 52	4	4	4	
OUTFIT. #1 PIER	1	1	1	
PIPE DRAFT - 52	2	2	2	
BOILER SHOP - 58	1	1	1	
OUTSIDE MACH. - 60	1	1	1	
[illegible]	1	1	1	
ELECTRIC SHOP - 70				
SHEET MET. SHOP - 74				
COPPER SHOP - 81				
PAINT SHOP - 78	1	1	1	
WELDING				
MOLD LOFT - 41	1	1	1	
BRACKET SHOP				
TOTAL YARD DIST.	[illegible]	[illegible]	[illegible]	

4650-51-ALT. 0
4650-51-ALT. 2
4650-51-ALT. 3

SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-2

FRAME 1 OF 2

PIPING PACKAGE UNIT APPLICATION

UNIT #1 · UNIT #2 · UNIT #3 · UNIT #4 · UNIT #5 · UNIT #6 · UNIT #7 · UNIT #8 · UNIT #9 · UNIT #10 · UNIT #11 · UNIT #12 · UNIT #13 · UNIT #14 · UNIT #15 · UNIT #16 · UNIT #17 · UNIT #18 · UNIT #19 · UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2
2	
2	
	4
7	
4	
3	3

LIST OF FLANGES

REQUISITION NO.			ALT. NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
504601				C-200	2	42"	30#	75°		125#	—	CARB. STL. FORG.	A105	125# SLIP-ON-WELDED ANSI TYPE FLAT FACE F.F.D.	MAIN COND. TO
				C-201	2	34"					—				
				C-202	5	10"				150#	B16.5			150# SLIP-ON-WELDED FLAT FACED F.F.D	
	504601-1X	504601-B	1	C-203	7	8"									
	A 504601-B		1	C-204	4	6"									LUBE OIL COOL
	504601-B		2	C-205	6	2"					B16.24	CAST BRONZE	B62	150# SIL-BRAZ F.F.D.	CIRCULATING W
			2	C-206	1	1"									
			3	C-207	1	[illegible]					B16.5	CARB. STL. FORG.	A105	150# REDUCING SOCKET WELD FLAT FACE (BORE [illegible])	

PIPING PACKAGE UNIT APPLICATION

UNIT #1 · UNIT #2 · UNIT #3 · UNIT #4 · UNIT #5 · UNIT #6 · UNIT #7 · UNIT #8 · UNIT #9 · UNIT #10 · UNIT #11 · UNIT #12 · UNIT #13 · UNIT #14 · UNIT #15 · UNIT #16 · UNIT #17 · UNIT #18 · UNIT #19 · UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2
2	1
1	
2	
2	
	4
7	
4	
3	4

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
504624-A				C-300	3	42"	30#	75°		125#	B16.21	CLOTH INSERTED [illegible] RUBBER	[illegible]	FULL FACE 1/8" THICK	CIRC. WATER
				C-301	1	38"					—				
				C-302	2	34"					—				
				C-303	2	30"					B16.21				
				C-304	5	10"				150#					
-A/B			1	C-305	7	8"									
	504624-A/B		1	C-306	4	6"									
				C-307	9	2"									
			3	C-308	2	[illegible]									

PIPING PACKAGE UNIT APPLICATION

UNIT #1 · UNIT #2 · UNIT #3 · UNIT #4 · UNIT #5 · UNIT #6 · UNIT #7 · UNIT #8 · UNIT #9 · UNIT #10 · UNIT #11 · UNIT #12 · UNIT #13 · UNIT #14 · UNIT #15 · UNIT #16 · UNIT #17 · UNIT #18 · UNIT #19 · UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2
72	108
32	
32	
36	
32	
84	
56	
24	
	60
56	
24	
12	16

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO. BOLTS	REQUISITION NO. NUTS	ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	
SUPPLY	504630-A	1	C-400	180								30#	75°	CARBON STL HEAVY HEX HEAD A-307 GR.B GALV.	1 1/2"	7"	B18.2.1 B1.1 UNC 2-A	CARBON STL HEAVY HEX HEAD A-307 GR. B GALV SEMI-FINISHED	1 1/2"	B18.2.2 B1.1 UNC 2B	42"
504630		1	C-401	32												6 3/4"					38"
			C-402	32												6 1/2"					34"
			C-403	36												6 1/4"					CON
SUPPLY		2	C-404	32												6					
504630-A		1	C-405	84												5 3/4"					VA
SUPPLY		2	C-406	36												5 1/4"					CO
			C-407	56											1 1/4"	6"			1 1/4"		SEA
		2	C-408	24											1 1/4"	5 1/4"			1 1/4"		CIR
504630		2	C-409	6											1"	2"			1"		L
SUPPLY			C-410	60											7/8"	3 3/4"			7/8"		10"
		1	C-411	56											3/4"	3 1/2"			3/4"		8"
			C-412	24											3/4"	3 1/4"			3/4"		6"
		1	C-413	28											5/8"	2"			5/8"		2"
		3	C-414	8											1/2"	1 3/4"			1/2"		1"

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-2

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-3

FRAME 1 OF 2

LIST OF FITTINGS

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
—	—	—	RESERVE	1	~~C-500~~	1	42"	30#	75°	—	.313	—	90-10 COPPER-NI	B-467	~~54°-27½' ELBOW B.W.~~	~~MAIN CONDENSER TO MN CIR INLET SCOOP~~		~~SEE NOTE #1~~
504607				1	C-501	1	42"			150#	—	B16.5 FLG'S	NEOPRENE	—	EXP.JT.-12"F TO F - FURN. W/ CENTERLINE OF ARCH 4 1/8" FROM ONE END	TO MN CIR. OUTLET SCOOP	NOS. 151,179,189, 90-93	MERCER-STYLE 500-N
					C-502	1	38"			150#	—			—	EXP.JT.-20"F TO F-FURN. W/ARCH CENTERED	TO MN CIR. INLET SCOOP	149,179,189, 90-93	
				1	~~C-503~~	1	34"			—	.284	—	90-10 COPPER-NI	B402-ALLOY 706	~~90° ELBOW B.W. (46" C TO FACE)~~	~~TO MN CIRCULATING PUMP~~	90-93	COONEY
504607					C-504	1	26"x32"			150#	—	B16.5 FLG'S	NEOPRENE	—	EXP.JT.(RED)-12"F TO F-FURN. W/ARCH CENTERED		146,182,179,189,90-93	MERCER-STYLE 500-N
504602					C-505	1	10"			—	.187	—	90-10 COPPER-NI	B402-ALLOY 706	90° ELBOW B.W.	TO HIGH OVBD DISC	90-93	COONEY FIG. [illegible]
504607					C-506	1	10"			150#	—	B16.5 FLG'S	NEOPRENE	—	EXP.JT.-12"F TO F-FURN. W/ARCH CENTERED		179,189, 90-93	MERCER-STYLE 500-N
SUPPLY				3	~~C-507~~	1	¼"x6"			—	—	—	BRASS	B43	~~NIPPLE-THD ONE END~~	~~VENT~~	—	~~WALWORTH~~
504602	P504602-A			2	C-508	2	8"x6"			—	[illegible]	—	90-10 COPPER-NI	B402-ALLOY 706	REDUCER B.W.	LUBE OIL COOLER TO OVBD DISC	90-93	COONEY FIG. X80-CRX60-06
504603					C-509	15	¾"			200#	—	—	CAST BRZ	B-62	90° ELL-SIL BRAZ	VENT	90-93,181	FLAGG FLOW FIG. 5001
	SUPPLY			3	C-510	7	2"				—	—			90° ELL-SIL BRAZ	VENT	90-93,181	FLAGG FLOW FIG. 5001
				3	~~C-511~~	1	1"x1¼"				—	—			~~ADAPTER FEM. SILBRAZ x M.P.T.~~	~~DRAIN~~	~~90-93,181~~	[illegible]
					C-512	7	2"				—	—			UNION-SIL BRAZ	VENT	90-93,181	FLAGG FLOW FIG. 5201
504605				2	C-513	2	10"x2"				—	—		B283	BRAZOLET RUN & OUTLET FOR I.P.S.		90-93,181	BONNEY FORGE
					C-514	1	34"x2"				—	—			BRAZOLET- RUN & OUTLET FOR I.P.S.		90-93,181	BONNEY FORGE
504603	SUPPLY			3	C-515	1	2"				—	—		B62	TEE-SIL BRAZ		90-93,181	FLAGG FLOW FIG. 5021
				4	~~C-516~~	2	¾"			—	—	—		B16	~~FEM. HOSE CPLG QUICK-DISCONNECT~~	~~SCRUBBING OUT CONN~~	~~90-93,175~~	[illegible]
504602					C-517	1	6"			—	.134	—	90-10 COPPER-NI	B402-ALLOY 706	90° ELBOW B.W.	LUBE OIL COOLER TO OVBD DISC	90-93	COONEY FIG. X60-90LRX-06
[illegible]					~~C-518~~	[illegible]	7"			80	.218	B36.10	CARB. STEEL	A-53 TYPE E OR S GR. B	~~PIPE-BLACK~~	~~INTERLOCK VALVES C-107 & C-110 (DETAIL 4-B)~~	~~128,135~~	—
—	—	—	RESERVE	6	~~C-519~~	1	[illegible]			—	—		STL CAD PLTD		~~PIN, QUICK RELEASE [illegible]~~			
—	—	—	RESERVE	3	~~C-520~~	1	½"x8"			—	—		STEEL	A-36	~~PIN, GUIDE ROUND ROD~~			
—	—	—	RESERVE	3	~~C-521~~	1	[illegible]			—	—				~~FLAT BAR~~			
—	—	—	RESERVE	3	~~C-522~~	1	[illegible]			—	—				~~FLAT BAR~~			
SUPPLY					C-523	1	1"x6"	30#	75°	—	—	—	BRASS	B-43	NIPPLE-6"LG THD ONE END	LUBE OIL COOLER DRAIN	—	WALWORTH
504605					C-524	1	½"			—	—	—	90-10 COPPER-NI	B151 ALLOY 706	THREDOLET-FLAT	PRESS GAGE LINE	NOS. 90-93	BONNEY FORGE
SUPPLY					C-525	2	½"x6"			—	—	—	BRASS	B-43	NIPPLE-6"LG THD ONE END		—	WALWORTH
504603					C-526	1	½"x½"x½"			—	—	—	CAST BRZ	B-62	RED TEE-FPT x FPT x SILBRAZ		NOS. 90-93,181	FLAGG FLOW FIG. 5016
504602	P504602-A			2	C-527	2	8"			—	.148	—	90-10 COPPER-NI	B402-ALLOY 706	90° ELBOW B.W.	MAIN CONDENSER TO LUBE OIL COOLER	90-93	COONEY FIG. X80-90LRX-06
—	—	—	RESERVE	3	~~C-528~~	2	14"			—	—		STEEL	A-36	~~PIPE CLAMP [illegible]~~	~~LUBE OIL COOLER SUPPORT~~		
—	—	—		3	~~C-529~~	5 SQ FT	⅛" THK			—	—		LEAD	—	~~LINER~~			
—	—	—		3	~~C-530~~	4 SQ FT	⅜" THK			—	—		STEEL	A-36	~~PLATE~~			
—	—	—	RESERVE	3	~~C-531~~	2	17			—	—		STEEL-GALV	—	~~SPRING, HANGER 9500# RATED LOAD~~	~~SUPPORT FOR VALVE C-103~~		[illegible]
—	—	—	RESERVE	3	~~C-532~~	2	1" THK			—	—		STEEL	A-285 GRADE C	~~PLATE~~			
				3	~~C-533~~	1	¾"	30#	76°	—	—		CAST BRZ	B-62	~~ELBOLET~~	~~VENT~~	~~NOS. 90-93~~	~~BONNEY FORGE~~
SUPPLY				3	~~C-534~~	1	2x2x¾	30#	75°	—	—	B16.15			~~RED TEE-SCRD.~~		~~90-93~~	~~FLAGG FIG. 4421~~
—	—	—	RESERVE	3	~~C-535~~	2	[illegible]			—	—		90-10 COPPER-NI	B-467	~~FLAT BAR~~	~~BACK UP RING @ C.C. (34" PIPE) SEE DET 13-B~~		
504602					C-536	1	10"			—	.187	—		B402 ALLOY 706	45° ELBOW B.W.	MAIN CONDENSER TO HIGH OVBD DISC	NOS. 90-93	COONEY FIG. 10X-45LRX-06
504603					C-537	3	½"			200#	—	—	CAST BRZ	B-62	TEE-SIL-BRAZ	MAIN CIR. PUMP PRESSURE LINES	90-93,181	FLAGG FLOW FIG. 5021
					C-538	4	½"				—	—			90° ELBOW SIL-BRAZ		90-93,181	FLAGG FLOW FIG. 5001
					C-539	4	½"				—	—			UNION SIL-BRAZ		90-93,181	FLAGG FLOW FIG. 5201
					C-540	2	½"				—	—			ADAPTER ½" MPT x FEM SILBRAZ		90-93,181	FLAGG FLOW FIG. 5060
				3	~~C-541~~	8	2"				—	—			~~45° ELL SIL-BRAZ~~	~~VENTS~~	~~90-93,181~~	~~FLAGG FLOW FIG. 5004~~
				3	~~C-542~~	1	2"x¾"				—	—			~~90° RED ELL SIL-BRAZ~~		~~90-93,181~~	~~FLAGG FLOW FIG. 5001~~
504611A					C-543	4'-0"	3½"			40	.226	B36.10	CARB. STEEL	A-53 TYPE E OR S GR. B	PIPE BLACK	VALVE STEM PROTECTORS FOR C-100 & C101	128,135	—
					C-544	4'-0	3"			40	.216	B36.10	CARB. STEEL	A-53 TYPE E OR S GR. B		FOR C-104	128,135	—
504603					C-545	2	3½"			—	—	B16.11	FORGED STEEL	A234	PIPE CAP SCRD.	FOR C-100 & C-101	90-93	BONNEY FORGE
					C-546	1	3"			—	—	B16.11				FOR C-104	90-93	BONNEY FORGE
504624				3	~~C-547~~	3'-0	3" MOD			⅛" THK	—		CLOTH INSERTED SBR RUBBER	[illegible]	~~RUBBER LINER~~	~~SUPPORT FOR 34" CIR WATER PIPE SEE DET. 6-D1~~	~~90-93~~	[illegible]
			RESERVE	3	~~C-548~~	10'-0"	½"x3"						STL	A-36	~~FLAT BAR-CLAMP 34½" I.D.~~			
			RESERVE	3	~~C-549~~	2	¾"x8"								~~x 8"LG~~			
			RESERVE	3	~~C-550~~	2	½"x8"								~~x 6"LG~~			
			RESERVE	3	~~C-551~~	14'-0	½"x4"											
			RESERVE	3	~~C-552~~	24'-0	3"x3"x¼"								~~ANGLE~~	~~MAIN CIR PUMP MOTOR SUPPORT SEE DET 7-D~~		
			RESERVE	3	~~C-553~~	4'-0	½"x3"								~~FLAT BAR~~			
504602-A				2	C-554	1	8"	30#	75°	—	.148	—	90-10-CUNI	B402 ALLOY 706	45° ELBOW B.W.	MAIN CIR. WATER TO L.O. COOLER	NOS. 90-93	COONEY FIG. X80-45LRX
				2	C-555	8	8"			—	.187	—			WELDING SLEEVE	MAIN CIR. SYS.		X80-SLVXX
				2	C-556	1	6"			—	.134	—						X60-SLVXX
				2	C-557	2	10"			—	.250	—						10X-SLVXX
UAO #				3	C-558	15 SQ FT	20.4 LBS			—	—	-	STEEL	ABS GR-A	GUSSET PLATES & PENETRATION RINGS	OVBD DISCHARGE	SEE DETAIL "14-B" ON DRWG. M4650-111-16	
UAO #				3	C-559	6-FT	⅜"			—	—	-			3/16"x4" FLAT BAR	INTERLOCK	SEE DETAIL "4-A" ON DRWG. M4650-111-18	
[illegible]-C				3	C-560	2	⅜"x3"			—	—	—	STEEL	—	TOGGLE PIN W/CHAIN			DOVER SUPPLY TP-3100
504603-A				3	C-561	1	2x2x¾			200#	-	-	CAST BRZ	B62	TEE SIL-BRAZE	VENT	NOS. 90-93,181	FLAGG FLOW FIG 5201
504605-A				3	C-562	1	¾"x8"				-	-	90-10 CU-NI	B151 ALLOY 706	BRAZOLET		NOS. 90-93	COONEY PT NO. 423423

NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

GENERAL NOTES

1-GROUNDING STRAPS FOR ALL EXPANSION JOINTS TO BE MADE FROM ⅛"x3"x36" COPPER SHEETS.

UAO-50140-B

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	1-13-77 3-3-77		1. DELETED FITTINGS C-500 AND C-503. NOTE: THESE FITTINGS ARE TO BE MADE OUT OF PIPE 2. ON FITTING C-501 CHANGED THE FACE TO FACE DIM. FROM 14" TO 12"	L.P.K P.C.O.	G.G.S. LTR DATED [illegible]
2	6-16-77		1. REVISED QTY OF C-508 (WAS 1), C-527 (WAS 1), C-513 CHGD DES. TO BRAZOLET. 2. ADDED C-554, C-555, C-556 & C-557	AG	[illegible]
3	9-14-77		1. DELETE ITEMS C-507 C-511 C-518 THRU C-522 C-528 THRU C-535 C-541 C-542 C-547 THRU C-553. 2. ADDED FITTINGS C-558 THRU C-562. 3. REVISED QTY OF ITEMS: C-510 FROM 12 TO 7 C-515 FROM 2 TO 1	L.P.K	[illegible]
4	3-28-78		1. DELETED ITEM C-516.	RHM	3-31-78

NO.	PLAN NO.	TITLE
3	M-4650-372-02-2	LIST OF FLG'S & GASKETS FOR CIRC. WATER
2	M-4650-372-02-1	LIST OF PIPE & VALVES FOR CIRC. WATER
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE SEPT 21, 1976
DRAWN WF
APPROVED
TRACED
APPROVED
CHECKED J.E.W.
APPROVED

PLAN NO. M-4650-372-02-3
ALT. NO. 4

FITTING LIST
FOR
MAIN & AUX. CIRC. WATER
PIPING

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	9-15-77				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

1

720

4650-51
4650-51
4650-51 REPL.
4650-51 REPL.

	DATE OF ISSUE			
ALTERATION	1	1	3	4
ENGINEERING DISTRIBUTION	[illegible]	6-17-77	9-29-77	4-7-78
OWNERS	5		4	3
AMERICAN BUREAU	5			
LLOYD'S R.S.				
U.S.M.A.				
U.S. NAVY				
U.S.C.G.	5			
JOINER CONT'R.				
OWNER'S INSP.		1	1	1
AM. BU. INSP.				
LLOYD'S INSP.				
U.S.M.A. INSP.		1	1	1
U.S. NAVY INSP.				
U.S.C.G. INSP.				
HULL DRAFT.-21	1	1	1	1
MACH. DRAFT.-22	2	2	2	2
ELEC. DRAFT.-23	1	1	1	1
OUTFIT DRAFT.-25				
ESTIMATING				
[illegible] (CTD)	1	1	1	1
PRODUCTION (BCD)				
ORDER DEPT.				
JOINER CONT. YARD				
[illegible] PLUMBING	2			
TOTAL ENG'R. DIST.	18	7	11	10
YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]	
[illegible]	1	1	1	
[illegible]	1	1	1	
PIECE RATE-11	1	1	1	
TEST DEPARTMENT				
QUALITY ASSURANCE	1	1	1	
[illegible] PLANNING	1	1	1	
GROUND ASSEMBLY	2	2	2	
[illegible]	2	2	2	
P. MCNAIR	1	1	1	
H. LEVY	1	1	1	
NO. WAY				
NO. WAY				
NO. WAY				
NO. WAY				
STRUCT. SUPER.	4	2	2	
OPTICAL DETAIL-48	2	2	2	
WET DOCK				
PIPE SHOP-52	6	6	6	
OUTFIT #1 PIER	1	1	1	
PIPE DRAFT.-52	2	2	2	
BOILER SHOP-58	1	1	1	
OUTSIDE MACH.-60	1	1	1	
[illegible]	1	1	1	
ELECTRIC SHOP-70				
SHEET MET. SHOP-74				
COPPER SHOP-51	1	1	1	
PAINT SHOP-78	1	1	1	
WELDING				
MOLD LOFT-41	1	1	1	
BRACKET SHOP				
TOTAL YARD DIST.	[illegible]	[illegible]	[illegible]	

4650-51-ALT. 1
4650-51-ALT. 3
4650-51-ALT. 4

SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-8161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-3

FRAME 2 OF 2

LIST OF FITTINGS

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	
	1	—	—	—	~~RESERVE~~	1	~~C-500~~	~~1~~	~~42"~~	~~30#~~	~~75°~~	–	~~.313~~	–	~~90-10 COPPER-NI~~	~~B-467~~	~~54°-27½° ELBOW B.W.~~	~~MAIN CONDENSE~~
1		504607				1	C-501	1	42"			150#	–	B16.5 FLG'S	NEOPRENE	–	EXP. JT. - 12"F TOF - FURN W/ CENTERLINE OF ARCH 4⅝" FROM ONE END	↓
		↓					C-502	1	38"			150#	–	↓	↓	–	EXP. JT. - 20"F TOF - FURN W/ARCH CENTERED	
1						1	~~C-503~~	~~1~~	~~34"~~			–	~~.284~~	–	~~90-10 COPPER-NI~~	~~B402-ALLOY 706~~	~~10° ELBOW B.W. (46" ℄ TO FACE)~~	
	1	504607					C-504	1	26"x32"			150#	–	B16.5 FLG'S	NEOPRENE	–	EXP. JT. (RED.) - 12"F TOF - FURN W/ARCH CENTERED	
	1	504602					C-505	1	10"			–	.187	–	90-10 COPPER-NI	B402-ALLOY 706	90° ELBOW B.W.	
		504607					C-506	1	10"			150#	–	B16.5 FLG'S	NEOPRENE	–	EXP. JT. - 12"F TOF - FURN W/ARCH CENTERED	↓
		~~SUPPLY~~				3	~~C-507~~	~~1~~	~~¼"x6"~~			–	–	–	~~BRASS~~	~~B43~~	~~NIPPLE - THD ONE END~~	~~VENT~~
2		504602	2)504602-A			2	C-508	2	8"x6"			–	.148x.132	–	90-10 COPPER-NI	B402-ALLOY 706	REDUCER B.W.	LUBE OIL COOLE
7		504603					C-509	15	¼"			200#	–	–	CAST BRZ	B-62	90° ELL - SIL BRAZ	VENT
7		↓	SUPPLY			3	C-510	7	2"				–	–	↓	↓	90° ELL - SIL BRAZ	VENT
						3	~~C-511~~	~~1~~	~~1"x1¼"~~				–	–			~~ADAPTER FEM SILBRAZ x M.P.T.~~	~~DRAIN~~
3		↓					C-512	7	2"				–	–		↓	UNION - SIL BRAZ	VENT
	1	504605				2	C-513	2	10"x2"				–	–		B283	BRAZOLET RUN & OUTLET FOR I.P.S.	
1		↓					C-514	1	34"x2"				–	–		↓	BRAZOLET RUN & OUTLET FOR I.P.S.	↓
1		504603	SUPPLY			3	C-515	1	2"			↓	–	–		B62	TEE - SIL BRAZ	
		↓				4	~~C-516~~	~~2~~	~~¾"~~			–	–	–	↓	~~B16~~	~~FEM. HOSE CPLG QUICK DISCONNECT~~	~~STEAMING OUT~~
1		504602					C-517	1	6"	↓	↓	–	.134	–	90-10 COPPER-NI	B402-ALLOY 706	90° ELBOW B.W.	LUBE OIL COOLER
		~~504644-A~~					~~C-518~~	~~8'-0"~~	~~3"~~			~~80~~	~~.218~~	~~B36.10~~	~~CARB. STEEL~~	~~A-53 TYPE S GR. B~~	~~PIPE - BLACK~~	~~INTERLOCK VALVE~~
		—	—	—	RESERVE	3	~~C-519~~	~~1~~	~~½"x2⅝"~~			–	–	–	~~STL-CAD PLTD~~		~~PIN, QUICK RELEASE W/ [illegible]~~	
		—	—	—	RESERVE	3	~~C-520~~	~~1~~	~~½"x3"~~			–	–	–	~~STEEL~~	~~A-36~~	~~PIN, GUIDE - ROUND ROD~~	
		—	—	—	RESERVE	3	~~C-521~~	~~1~~	[illegible]			–	–	–	↓	↓	~~FLAT BAR~~	
		—	—	—	RESERVE	3	~~C-522~~	~~1~~	[illegible]			–	–	–			~~FLAT BAR~~	↓
1		SUPPLY					C-523	1	1"x6"	30#	75°	–	–	–	BRASS	B-43	NIPPLE - 6" LG THD ONE END	LUBE OIL COOLE
1		504605					C-524	1	½"	↓	↓	–	–	–	90-10 COPPER-NI	B151 ALLOY 706	THREDOLET - FLAT	PRESS GAGE LIN
2		SUPPLY					C-525	2	½"x6"			–	–	–	BRASS	B-43	NIPPLE - 6" LG THD ONE END	↓
1		504603					C-526	1	½"x¼"x½"			–	–	–	CAST BRZ	B-62	RED TEE - FPT x FPT x SILBRAZ	↓
2		504602	2)504602-A			2	C-527	2	8"	↓	↓	–	.148	–	90-10 COPPER-NI	B402-ALLOY 706	90° ELBOW B.W.	MAIN CONDENS
		—	—	—	~~RESERVE~~	3	~~C-528~~	~~3~~	~~14"~~			–	–	–	~~STEEL~~	~~A-36~~	~~PIPE CLAMP (4" wd x [illegible])~~	~~LUBE OIL COOLE~~
		—	—	—	↓	3	~~C-529~~	~~5 SQ. FT.~~	~~⅛" THK~~			–	–	–	~~LEAD~~	—	~~LINER~~	↓
		—	—	—		3	~~C-530~~	~~4 SQ. FT.~~	~~⅛" THK~~			–	–	–	~~STEEL~~	~~A-36~~	~~PLATE~~	
		—	—	—	~~RESERVE~~	3	~~C-531~~	~~2~~	~~17~~			–	–	–	~~STEEL GALV~~	—	~~SPRING, HANGER - 9500# RATED LOAD~~	~~SUPPORT FOR VA~~
		—	—	—	~~RESERVE~~	3	~~C-532~~	~~2~~	~~1" THK~~			–	–	–	~~STEEL~~	~~A-285 GRADE C~~	~~PLATE~~	↓
					↓	3	~~C-533~~	~~1~~	~~¾"~~	~~30#~~	~~75°~~	–	–	–	~~CAST BRZ~~	~~B-62~~	~~ELBOLET~~	~~VENT~~
		~~SUPPLY~~				3	~~C-534~~	~~1~~	~~2"x2"x¾"~~	~~30°~~	~~75°~~	–	–	~~B16.15~~	↓	↓	~~RED TEE - SCRD.~~	↓
		—	—	—	~~RESERVE~~	3	~~C-535~~	~~2~~	[illegible]			–	–	–	~~90-10 COPPER-NI~~	~~B-467~~	~~FLAT BAR~~	~~BACK UP RING @ C~~
	1	504602					C-536	1	10"			–	.187	–	↓	B402-ALLOY 706	45° ELBOW B.W.	MAIN CONDENSER
3		504603					C-537	3	½"			200#	–	–	CAST BRZ	B-62	TEE - SIL - BRAZ	MAIN CIR. PUMP
4		↓					C-538	4	½"				–	–			90° ELBOW SIL-BRAZ	
4							C-539	4	½"				–	–			UNION SIL-BRAZ	
2							C-540	2	½"				–	–	↓	↓	ADAPTER ½" MPT x FEM SILBRAZ	↓
						2	~~C-541~~	~~8~~	~~2"~~				–	–			~~45° ELL SIL-BRAZ~~	VENTS
		↓				2	~~C-542~~	~~1~~	~~2"x¾"~~			↓	–	–	↓	↓	~~90° RED ELL SIL-BRAZ~~	↓
1	1	504644-A					C-543	4'-0"	3½"			40	.226	B36.10	CARB. STEEL	A-53 TYPE E OR S GR. B	PIPE BLACK	VALVE STEM PR
1		↓					C-544	4'-0	3"			40	.216	B36.10	CARB. STEEL	A-53 TYPE E OR S GR. B	↓	
1	1	504603					C-545	2	3½"			–	–	B16.11	FORGED STEEL	A234	PIPE CAP SCRD.	↓
1		↓					C-546	1	3"	↓	↓	–	–	B16.11	↓	↓	↓	
		~~504624~~				3	~~C-547~~	~~3'-0~~	~~3" WIDE~~			~~⅛" THK~~	–	–	~~CLOTH INSERTED SBR RUBBER~~	[illegible]	~~RUBBER LINER~~	~~SUPPORT FOR~~
		—	—	—	~~RESERVE~~	3	~~C-548~~	~~12'-0"~~	~~½"x3"~~						~~STL~~	~~A-36~~	~~FLAT BAR CLAMP 34¼" I.D.~~	
		—	—	—	~~RESERVE~~	3	~~C-549~~	~~2~~	~~¾"x8"~~								~~x 8" LG~~	↓
		—	—	—	~~RESERVE~~	3	~~C-550~~	~~2~~	~~½"x8"~~								~~x 6" LG~~	
		—	—	—	~~RESERVE~~	3	~~C-551~~	~~14'-0~~	~~½"x4"~~									~~MAIN CIR PUMP~~
		—	—	—	~~RESERVE~~	3	~~C-552~~	~~24'-0~~	~~3"x3"x¼"~~								~~ANGLE~~	
		—	—	—	~~RESERVE~~	3	~~C-553~~	~~4'-0~~	~~⅜"x3"~~						↓	↓	~~FLAT BAR~~	↓
1		504602-A				2	C-554	1	8"	30#	75°	–	.148	–	90-10-CUNI	B402 ALLOY 706	45° ELBOW B.W.	MAIN CIR. WATER T
8						2	C-555	8	8"			–	.187	–			WELDING SLEEVE	MAIN CIR. SYS.
1						2	C-556	1	6"			–	.134	–				
	2	↓				2	C-557	2	10"			–	.250	–	↓	↓	↓	
		VAP *				3	C-558	15 FT.	20.4 FT.			–	–	-	STEEL	ABS GR. A	GUSSET PLATES & PENETRATION RINGS	OVB
		VAP *				3	C-559	6 FT.	⅜"			–	–	-	↓	↓	⅜"x4" FLAT BAR	INTE
		504630-C				3	C-560	2	½"x3"			–	–	–	STEEL	—	TOGGLE PIN W/CHAIN	
		504603-A				3	C-561	1	2"x2"x½"			200#	-	-	CAST BRZ	B62	TEE SIL-BRAZE	VEN
		504605-A				3	C-562	1	¼"x8"	↓	↓	↓	-	-	90-10 CU-NI	B151 ALLOY 706	BRAZOLET	

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-372-02-5

NOV 1980 10X

FRAME 1 OF 4

LIST OF PIPES

REQUISITION NO.	JOB NO.	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
	182	1,3,4,5,6	F-1	434'0"		434'0"	8"	—	.148	150#	85°	—	90-10 COPPER NICKEL - WELDED	B-467 ALLOY 706		II	SERVICE	NOS. 132 & 141
		1	F-2	50'0		50'0	6"	—	.134			—						NO. 132
		1	F-3	60'0		60'0	5"	—	.125			—						
		1	F-4	155'0		155'0	4"	—	.109			—	SEAMLESS	B-466 ALLOY 706				
		1	F-5	125'0		125'0	3"	—	.095			—						
		1,6	F-6	328'0"		328'0	2½"	—	.083			—						
		1	F-7	85'0		85'0	2"	—	.083			—						
		1	F-8	190'0		190'0	1½"	—	.072			—						
		1	F-9	1'0		1'0	1¼"	—	.072			—						
		1	F-10	65'0		65'0	1"	—	.065			—						
		2,3,5	F-11	126'0"		126'0"	½"	—	.065			—						
		5	B-23	1'0"		1'0"	2"	160	.344	30#		B36.10	CARBON STEEL - GALV.	A-53 TYPE "E" GRADE B		II	SERV.	NOS. 128 & 135
			B-22	2'0"		2'0"	2½	160	.375	30#	85°	B36.10	CARBON STEEL - GALVANIZED	A-53 TYPE "E" GRADE B		II	SERV.	NOS. 128 & 135
			AC-30	30'0"		30'0"	5"	40	.258	—	—	B36.10	CARBON STEEL - WELDED	A-53 TYPE "E" GRADE B		II	SERV.	
	372	1,3	AC-1	200'0"		200'0"	10"	—	.187	29#	85°	—	90-10 COPPER NICKEL WELDED	B-467 ALLOY 706		II	SERVICE	NOS. 132 & 141
		1,3	AC-2	100'0"		100'0"	8"	—	.148			—						
		1,3,4	AC-3	280'0		280'0	5"	—	.125			—						
		1,3,4	AC-4	178'0"		138'0"	4"	—	.109			—	SEAMLESS	B-466 ALLOY 706				NO. 132
		1	AC-5	90'0		90'0	3"	—	.095			—						
		2,3,4	AC-6	230'0"		230'0"	2½"	—	.083			—						
		1,7	AC-7	164'0		134'0	2"	—	.083			—						
		1,5	AC-8	128'0"		128'0"	1½"	—	.072			—						
		1	AC-9	125'0		125'0	1¼"	—	.072			—						
		1,3,5,6	AC-10	400'0		400'0	1"	—	.065			—						
		1,6	AC-11	154'0		154'0	¾"	—	.065			—						
		1	AC-12	285'0		235'0	½"	—	.065			—						
		1	AC-13	7'0		7'0	⅜"	—	.065			—						
		1,3,6	AC-14	80'0"		80'0"	¼"	—	.065			—						
		1	AC-15	10'0		10'0	⅛"	—	.058			—						
		1,3	AC-16	3'0		3'0	10"	120	.884			B36.10	CARBON STEEL	A53 TYPE E GR B				NOS. 128, 135

LIST OF VALVES

REQUISITION NO.	JOB NO.	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD.	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO.
	182		F-100	1	—	50	85	150#	—	BRONZE	—	MONEL	MONEL	MONEL	—	FLGD, F&D	B16.5	2 VALVE SIMPLEX MANIF. AIR OPER.	NO. 96	
			F-101	1	—	225	85	150#	—		—				—			4 VALVE		
			F-102	1	8"			150#	—		—				—			GATE		
			F-103	1	8"				—		—				—			ANGLE STOP CHECK		
		1	F-104	2	1"			150#	—		—	MONEL	MONEL	MONEL	—	FLANGED, F&D	—	SOLENOID VALVE		
			F-105	3	8"			150#	—		B-62	MONEL	MONEL	MONEL	—	FLANGED, F&D.	B16.24	GATE (LOCKED OPEN SEE GEN. NOTE 1)	NOS. 2,6,90-93	LUNK'NH'M'R FIG. 1404
			F-106	1	6"				—						—				2,6,90-93	1404
			F-107	3	4"				—						—				2,6,90-93	1404
			F-108	1	4"				—						—			(LOCKED OPEN SEE GEN. NOTE 1)	2,6,90-93	1404
			F-109	1	4"				—						MONEL			SWING CHECK	10,90-93	1402
		3	F-110	3	3"				—						—			GATE (LOCKED OPEN SEE GEN. NOTE 1)	2,6,90-93	1404
		3	F-111	2	3"×3"			125#	—		—	—	—	—	—			RELIEF VALVE (SET AT 141 PSIG)		ORDERED ON REF 2
		6	F-112	24	1½"			150#	—		B-61	MONEL	COMP	MONEL	—	FLGD. INLET X HOSE OUTLET	B16.24/B2.4	GLOBE HOSE W/ CAP & CHAIN	NOS. 6,44,90-93	PIMA FIG. B-127
			F-113	1	1"				—		B-61		MONEL		—	FLGD., F&D.	B16.24	GLOBE	NOS. 1,90-93	POWELL FIG. 104
			F-114	8	½"			200#	—		B-61				—	SIL. BRZD.	MIL-F-1183	UNION END GLOBE	1,181,90-93	LUNK'NH'M'R FIG. 2100
		3	~~F-115~~	~~1~~	~~3"×3"~~			~~125#~~	—						—	~~FLANGED F&D~~	~~B16.24~~	~~RELIEF VALVE (SET AT 150 PSIG)~~		~~ORDERED ON REF 2~~
		3,4	F-116	6	2½"			150#	—		B-62	MONEL	COMP	MONEL	—	FLGD. INLET X HOSE OUTLET	B16.24/B2.4	GLOBE HOSE W/CAP & CHAIN	NOS. 6,42,90-93	PIMA FIG. B-127
		3,4	F-117	1	2½"				—						—			ANGLE		B-147
		6	F-118	1	2"			200#	—				MONEL		—	SIL.-BRZD.	MIL-F-1183	GATE - UNION ENDS - NRS. W/IND.	1,181,90-93	LUNK'NH'M'R FIG. 2102
		6	F-119	1	2"				—						—			GLOBE		2100
	372		AC-100	1	—	29	85	150#	—	BRONZE	—	—	—	—	—	FLGD., F&D.	B16.24	2 VALVE SIMPLEX MANIF. AIR OPER.	NO. 96	
			AC-101	1	—			150#	—		—	—	—	—	—					
			AC-102	4	10"			150#	—		—	MONEL	MONEL	MONEL	—		B16.24	GATE		
			AC-103																	
			AC-104	1	3"	29	85	150#	—	BRONZE	—	—	—	—	—	FLGD., F&D.	B16.24	GLOBE STOP-CHECK AIR OPER.	NO. 96	
			AC-105	1	8"				—		—	—	—	—	—			BACK PRESSURE VALVE		
			AC-106	1	4"				—		—	MONEL	MONEL	MONEL	—			GATE MTR. OPER.		
			AC-107	1	4"				—		—	—	—	—	—			CONTROL VALVE		
		1	AC-108	1	1"			150#	—		—	BRONZE	BRONZE	BRONZE	—	FLGD. F&D.	—	SOLENOID VALVE		
		1,3	AC-109	3	6"			150#	—		—	MONEL	MONEL	MONEL	—	FLGD., F&D.	B16.24	GATE AIR OPER.		
		1	~~AC-110~~	~~1~~	~~10"~~			~~150#~~	—	~~BRONZE~~	~~B-62~~	~~MONEL~~	~~MONEL~~	~~MONEL~~	—	~~FLGD., F&D.~~	~~B16.24~~	~~GLOBE STOP-CHECK~~	~~NOS. 6,90-93~~	~~LUNK'NH'M'R FIG. 1400-X~~
			AC-111	1	10"			150#	—	BRONZE	B-62	MONEL	MONEL	MONEL	—	FLGD., F&D.	B16.24	GLOBE STOP-CHECK	NOS. 6,90-93	LUNK'NH'M'R FIG. 1400-X
		13	AC-112	1	5"				—		—	—	—	—	—			GATE AIR OPER.	NO. 96	
		13	~~AC-113~~	~~3~~	~~5"~~				—		~~B-62~~	~~MONEL~~	~~MONEL~~	~~MONEL~~	—			~~GATE~~	~~NOS. 2,6,90-93~~	~~LUNK'NH'M'R FIG. 1404~~
			AC-114	1	4"				—						—			GLOBE STOP-CHECK	6,90-93	1400-X
			AC-115	1	—	200	180	—	—		—	—	—	—	—		B16.24	2 VALVE SIMPLEX MANIF. AIR OPER.	NO. 96	
			AC-116	1	—			—	—		—	—	—	—	—					
			AC-117	3	4"	29	85	150#	—		B-62	MONEL	MONEL	MONEL	—		B16.24	GLOBE	NOS. 6,90-93	LUNK'NH'M'R FIG. 1400
		1	AC-118	1	4"			200#	—		B-61	BUNA-N			MONEL	WAFER	—	BUTTERFLY W/LEVER OPERATOR	NOS. 96	NORRIS R-2030-GAAAA
		3	AC-119	1	6"×6"			150#	—		—	—	—	—	—	FLGD., F&D.	B16.24	RELIEF VALVE (SET AT 39 PSI)		ORDER ON REF 2
			AC-120	1	2½"				—		B-62	MONEL	MONEL	MONEL	—			GATE	NOS. 2,6,90-93	LUNK'NH'M'R FIG. 1404
			AC-121	1	2"			200#	—		B-61				—	SIL-BRZD.	MIL-F-1183	GATE - N.R.S. W/IND.; UNION ENDS	1,181,90-93	2102
			AC-122	1	2½"			150#	—		B-62				—	FLGD., F&D.	B16.24	GLOBE	6,90-93	1400
			AC-123	1	2"			200#	—		B-61				—	SIL-BRZD.	MIL-F-1183	GLOBE, UNION ENDS	1,181,90-93	2100
		4	AC-124	5	1½"			150#	—						—	FLGD. INLET X HOSE OUTLET	B16.24/B2.4	GLOBE HOSE W/ CAP & CHAIN	6,38,90-93	WILLIAMS 115F
			AC-125	2	1½"			200#	—						—	SIL-BRZD.	MIL-F-1183	GLOBE - UNION ENDS	1,181,90-93	LUNK'NH'M'R FIG. 2100
			AC-126	3	1½"				—						—			GATE - -N.R.S. W/IND.	1,181,90-93	2102
			AC-127	5	¾"				—						—			-	1,181,90-93	2102
			AC-128	1	1¼"				—						—			GLOBE	1,181,90-93	2100
			AC-129	1	1½"				—						—			GLOBE STOP-CHK.; UNION ENDS	1,181,90-93	LUNK'NH'M'R FIG. 2100-MOD
		13	AC-130	3	1"				—						—			GLOBE - UNION ENDS	1,181,90-93	2100
		3,6	AC-131	4	1"				—						—			GATE - N.R.S. W/ IND.	1,181,90-93	2102
			AC-132	2	1"				—						—			GLOBE -	1,181,90-93	2100
			AC-133	1	1"				—						—			GATE - N.R.S. W/IND.	1,181,90-93	2102
		6	AC-134	9	¾"				—						—			GLOBE -	1,181,90-93	2100
		1,8	AC-135	16	½"				—						—			-	1,181,90-93	2100
		1,8	AC-136	6	½"				—						—			GATE - N.R.S. W/IND.	1,181,90-93	2102
		4,5,6	AC-137	14	¼"				—						—			GLOBE -	1,181,90-93	2100
		6	~~AC-138~~	~~1~~	~~⅛"~~				—						—			-	1,181,90-93	2100
			AC-139	1	¾"				—		—	—	—	—	—			RELIEF VALVE (SET AT 39 PSI)		ORDER ON REF 2
			AC-140	4	4"			150#	—		—	—	—	—	—	FLANGED F&D	B16.24	WATER REGULATING	NO. 96	
		1	AC-141	23	5"			200#	—		B-62	BUNA-N	MONEL	MONEL	MONEL	WAFER	—	BUTTERFLY W/ LEVER OPERATOR	NOS. 96	KEYSTONE #139
			AC-142	2	3"			150#	—		—	—	—	—	—	FLANGED F&D	B16.24	WATER REGULATING	NO. 96	
			AC-143	2	2½"				—		—	—	—	—	—				NO. 96	
		1	AC-144	8	2½"			200#	—		B-62	BUNA-N	MONEL	MONEL	MONEL	WAFER	—	BUTTERFLY W/LEVER OPERATOR	NOS. 96	KEYSTONE #139
			AC-145	2	2"				—		B-61	MONEL			—	SIL BRZD.	MIL-F-1183	GLOBE - UNION ENDS	NOS. 1,181,90-93	LUNK'NH'M'R FIG. 2100
		4	AC-146	4	4"	200	180	150#	—		B-62				—	FLGD., F&D.	B16.24	GATE	2,6,90-93	1404
			AC-147	1	3"				—						—				2,6,90-93	1404
			AC-148	1	2½"				—						—				2,6,90-93	1404

ALTERATIONS CONTINUED

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
3 CONT.			5. REVISED SCH. OF AC-16 AND AC-17 FROM 80 TO 120 6. REVISED SIZE OF AC-119 FROM 5"×5" TO 6"×6" 7. REVISED AC-25 FROM CU-NI TO STL 8. REVISED TRIM AND VENDOR OF F-112 AND QTY FROM 18 TO 24 9. REVISED B-112 IN ITS ENTIRETY 10. INDICATED B-12, B-13 AND B-14 TO BE ORDERED GALV. 11. DELETED F-115 AND B-121 12. REVISED QTY OF F-1 (200' TO 370') F-11 (19' TO 100'), AC-1 (55' TO 200'), AC-2 (60' TO 100'), AC-3 (110' TO 260'), AC-4 (120' TO 160'), AC-6 (80' TO 180'), AC-10 (102' TO 150'), AC-14 (45' TO 65'), B-5 (140' TO 210'), B-6 (75' TO 80'), B-7 (10' TO 70'), B-8 (6' TO 10'), B-9 (285' TO 420' B/10' G), F-107 (1 TO 3), F-110 (2 TO 3), F-111 (1 TO 2), AC-130 (1 TO 3), AC-131 (1 TO 2) AND B-114 (2 TO 1) 13. ADDED GEN. NOTE #141 TO ITEMS AC-28, F-1, AC-1, AC-2, AC-3	D.L.B.	G.G. SHARP LTR. DATED 9-1-77
4	4-28-77		1- FOR VALVE AC-157 CHANGED THE DESIGN CRITERIA FROM (200 PSI - 29 PSI) & (180°F - 85°F) 2- FOR VALVE B-118 ADDED NOTE #96 & REMOVED "VENDOR FURN." FROM MANU. COLUMN. 3- REINSTATED VALVE B-121 PER YIS 4650-22-9 4- ADDED AC-173, B-136 & B-137 5- DECR. QTY OF AC-146 (6-4) 6- FOR VALVES F-116 & F-117 CHG'D NOTE 44 TO 42 PER YIS NO 4650-22-12 7- INCR. THE QTY OF: F-1 (370'-404'), AC-3 (260'-280'), AC-4 (160'-178'), AC-6 (180'-230'), AC-23 (20'-24'), AC-28 (200'-206'), AC-124 (1-5), AC-137 (5-9), B-2 (445'-455'), B-9 (425'-435'), B-10 (130'-131'), B-11 (45'-100'), B-117 (5-6), B-12 (3'-15'), B-118 (5-6) & B-126 (10-11)	PCG	
5	11-22-77		1- ADDED NOS. B-23, B-24 & B-138 2- INCR. QTY OF: F-1 (404'-419'), F-6 (300'-328'), F-11 (100'-126'), AC-8 (112'-128'), AC-10 (150'-240'), AC-137 (9-10), B-2 (455'-480'), B-6 (80'-100') 3- FOR B-21 CH'GD THE DESCRIP. TO READ BLK IN LIEU OF GALV.	PCG	
6	2-1-78		1. REVISED THE QTY. FOR: F-1 (419' TO 434'), AC-10 (240' TO 400'), AC-11 (88' TO 154'), AC-14 (65' TO 80'), AC-28 (206' TO 220'), B-9 (435' TO 445'), B-10 (131' TO 171'), AC-131 (2-4), AC-134 (5-9), AC-137 (10-14). 2. DELETED AC-138 3. ADDED AC-174 & AC-175	EHM	2-8-78
7	5-8-78		1. REVISED QTY. OF ITEMS: AC-7 (134'-164'), B-2 FROM 480' TO 487' (O.LR. 2-17-78), B-9 455' 560	LBE	5-17-78
8	8-30-78		1- INCREASED VALVE NO. AC-135 FROM 15 TO 16. INCREASED VALVE NO. AC-136 FROM 5 TO 6. 2- ADDED REQ'N. NO. FOR VALVE NO. AC-166, ADDED REQ'N. NO. FOR VALVE NO. AC-167, AC-168 & AC-169. ADDED REQ'N. NO. FOR VALVE NO. AC-171 3- REMOVE NOTE #96 FROM VALVE NO. AC-172. 4- CHANGED REFER NO. 1 TO 2 ON VALVE NO. B-134.	E.J.O.	9-7-78
9	2-1-79		1. B-10 (1½") & B-11 (1¼") CHANGED FROM "BLK" TO "GALV" PER YARD REQUEST 2. B-10 (1½") QTY 186'-0" WAS 171'-0" TO SHOW AMOUNT REQ'D FOR MOD #3.	EJK	2-6-79

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	10/4/76		1. DELETED B-109, B-110, B-122 AND B-123. 2. REVISED QTY OF B-112 FROM 2 TO 1. 3. ADDED B-127, B-128 AND B-129 4. RESERVED B-100, B-128 AND B-129 THE ABV. ITEMS OF THIS ALT. TO SUIT DIAGRAM M-4650-111-20-54 ISSUED OCT. 1, 1976 5. DELETED AC-110 6. REVISED QTY OF AC-113 FROM 3 TO 2, AC-141 FROM 14 TO 15, AC-135 FROM 14 TO 15 AND AC-136 FROM 4 TO 5. 7. ADDED AC-159, AC-160 AND AC-161. ITEMS #5, #6 AND #7 OF THIS ALT. TO SUIT DIAGRAM M-4650-111-20-46 ISSUED OCT. 1, 1976	D.L.B.	
	11/5/76		8. ADDED AC-162, AC-163 & AC-164 9. ADDED PIPES F1 THRU F10, AC-1 THRU AC-24 & B1 THRU B-14	CWF	
	1/24/77		10. INDICATED TOTAL QTY. OF B-1, B-2, B-4, B-5 AND B-9 THRU B-14 TO BE ORDERED BLACK PER SHIP SPEC.	D.L.B.	
	1/25/77		11. VALVES B-113 TO B-116 REVISED. 12. VALVES B-130 TO B-132 ADDED. 13. QTY. OF VALVE B-124 INCRD. FROM 2 TO 6. 14. QTY. OF VALVE AC-141 INCRD. FROM 15 TO 23. 15. QTY. OF VALVE AC-144 INCRD. FROM 6 TO 8. 16. VALVES B-120 DELETED.	J.J.P. JR.	
	2/23/77		17. REVISED QTY OF AC-113 (2 TO 3) AND DELETED AC-162 18. REVISED AC-112 FROM AIR OPER. GLOBE TO AIR OPER. GATE. 19. REVISED AC-159 FROM GLOBE TO GLOBE W/O. HANDWHEEL W/ STEM CAP AND ADDED SPECIAL NOTE #96 TO SPECIAL NOTES 20. ADDED AC-165 & AC-166 21. REVISED QTY OF AC-130 (3 TO 1)		
	3-9-77		22. REVISED QTY. OF B-121 (2 TO 1) 23. ADDED B-133.	J.J.P. JR.	
	3-17-77		24. REVISED SIZE OF AC-109 FROM 5" TO 6" AND QTY OF AC-109 FROM 3 TO 2. 25. ADDED AC-167, AC-168 AND AC-169 TO B/M. 26. REVISED VALVES F-104, AC-108 & B-112 27. REMOVED RES. FOR VALVES B-100, B-128 & B-129 28. APPLIED SPL. NOTE #96 TO VALVES AC-118, AC-141 & AC-144	D.L.B.	G.G. SHARP LTR. DATED 5-17-77
2	4-12-77		1. CHG QTY OF PC # AC-6 (20 TO 80) & B-10 (30 TO 130). 2. ADDED PC # AC-25, B-15 & B-16 3. ADDED PC # F-11 4. CHG QTY OF B-6 (25' TO 75').	R.J.L. / Sell	G.G.S. LTR. DATED 5-17-77
3	7/1/77		1. DELETE AC-113 2. REVISED QTY. OF AC-112 (2 TO 1), AC-109 (2 TO 3), AC-160 (1 TO 4) 3. REVISED SIZE OF AC-159 FROM 5" TO 6") THE ABV. ITEMS OF THIS ALT. TO SUIT ADDED L.O. COOLER ON DSL. GEN. PER ALT. △ OF DIAGRAM M-4650-111-20-46. 4. ADDED B-22, AC-30, AC-26, AC-27, AC-28, B-17 THRU B-21, F-116 THRU F-119, AC-170 THRU AC-172, B-134 AND B-135		

ALTERATIONS CONTINUED NEXT PANEL

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. AS NOTED

GENERAL NOTES

1- DESIGNATIONS "LOCKED OPEN" OR "LOCKED CLOSED" ARE LISTED FOR YARD TECHNICAL INFORMATION ONLY - NOT FOR ORDERING PURPOSES. LOCKS AND LOCATIONS ARE PROVIDED ON REF #3

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE SEPT. 7, 1976
DRAWN D. BEGGARLY
APPROVED
TRACED
APPROVED
CHECKED JEY
APPROVED

PLAN NO. M-4650-372-02-5
ALT. NO. 9

PIPE & VALVE LIST FOR SALT WATER PIPING IN MACHY. SP.

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	9-15-77				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
3	M-4650-372-2	ENGINEERS LOCK LIST
2	M-4650-111-13	SCHEDULE OF SAFETY & RELIEF VALVES
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

1

M-721

ALTERATION
DATE OF ISSUE
ENGINEERING DISTRIBUTION
OWNERS
AMERICAN BUREAU
LLOYD'S R.S.
U.S.M.A.
U.S. NAVY
U.S.C.G.
JOINER CONT'R
HULL DRAFT
MACH. DRAFT
ELEC. DRAFT
OUTFIT DRAFT
ESTIMATING
PRODUCTION
ORDER DEPT.
JOINER CONT'R
TOTAL ENG'R DIST.
YARD DISTRIBUTION
SHIP SUPT.
PIECE RATE
TEST DEPARTMENT
TOTAL YARD DIST.

80 PT

SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF #1
D DISCH	II	SERVICE	NOS. 128, 135
			132
LLER TO BRINE PUMP			
E PUMP TO VALVE (AC-164)			
FEED PUMP TO DISTILLATE COOLER			
E PUMP SEAL			
E (AC-164) TO OVBD DISCH			128, 135
LLER R.V. TO BILGE			
GEN. OVBD. DISCH.	II	SERV.	NOS. 128, 135
			132
			141
	II	34#	NOS. 128, 135
ING SYS.			
OVBD			
DISCH.			
WASHDOWN DRAINS			
SHORE CONN.			

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST O

REQUISITION NO.				JOB NO.	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	GALV.	TOTAL	SIZE	SCH NO.	WALL THK.	DESIGN CRITERIA P.S.I.	°F	ANSI DIM. STD.		UNIT 182-12-7
504552	504552-C	504552-E		182	1,3,4,5,6	F-1	434'-0"		434'-0"	8"	—	.148	150#	85°	—	90-10	302'
					1	F-2	50'-0		50'-0	6"	—	.134			—		
					1	F-3	60'-0		60'-0	5"	—	.125			—		
					1	F-4	155'-0		155'-0	4"	—	.109			—		52'
					1	F-5	125'-0		125'-0	3"	—	.095			—		3'
	504552-1X				1,6	F-6	328'-0"		328'-0	2½"	—	.083			—		94'
					1	F-7	85'-0		85'-0	2"	—	.083			—		64'
					1	F-8	190'-0		190'-0	1½"	—	.072			—		4'
					1	F-9	1'-0		1'-0	1¼"	—	.072			—		1'
					1	F-10	65'-0		65'-0	1"	—	.065			—		
504552-A	504552-C	504552-E			2,3,5	F-11	126'-0"		126'-0"	½"	—	.065			—		58'
504544-D					5	B-23	1'-0"		1'-0"	2"	160	.344	30#		B36.10	CAR	
504544-B						B-22	2'0"		2'-0"	2½	160	.375	30#	85°	B36.10	CAR	11'6"
504544-B						AC-30	30'-0"		30'-0"	5"	40	.258	—	—	B36.10	CAR	
504552	504552-C			372	1,3	AC-1	200'-0"		200'-0"	10"	—	.187	29#	85°	—	90-10	
	504552-C				1,3	AC-2	100'-0"		100'-0"	8"	—	.148			—		
	504552-C				1,3,4	AC-3	280'-0		280'-0	5"	—	.125			—		
	504552-C				1,3,4	AC-4	178'-0"		178'-0"	4"	—	.109			—		
					1	AC-5	90'-0		90'-0	3"	—	.095			—		
	504552-C	504552-C			2,3,4	AC-6	230'-0"		230'-0"	2½"	—	.083			—		
	504552-G				1,7	AC-7	164'-0		134'-0	2"	—	.083			—		
	504552-E				1,5	AC-8	128'-0"		128'-0"	1½"	—	.072			—		40'
					1	AC-9	125'-0		125'-0	1¼"	—	.072			—		
	504552-C	504552-A			1,3,5,6	AC-10	400'-0"		400'-0"	1"	—	.065			—		
		504552-F			1,6	AC-11	154'-0"		154'-0"	¾"	—	.065			—		
					1	AC-12	235'-0		235'-0	½"	—	.065			—		
					1	AC-13	7'-0		7'-0	⅜"	—	.065			—		
	504552-C	504552-F			1,3,6	AC-14	80'-0"		80'-0"	¼"	—	.065			—		
					1	AC-15	10'-0		10'-0	⅛"	—	.058			—		
504544-B					1,3	AC-16	3'-0		3'-0	10"	120	.884			B36.10	CAR	

ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF #1	MANUFACTURER DWG. OR FIG. NO.
B16.24	GLOBE	NOS. 6, 90-93	LUNK'NH'M'R FIG. 1400
		6, 90-93	1400
B16.24/B2.4	ANGLE HOSE W/CAP & CHAIN	6, 36, 90-93	WILLIAMS FIG. 215F
	GLOBE HOSE W/CAP & CHAIN	6, 36, 90-93	115F
B16.24	GLOBE STOP-CHECK	NOS. 6, 90-93	LUNK'NH'M'R 1400-X
B16.24	RELIEF VALVE (SET AT 225 PSIG)	—	ORDER ON REF #2
		—	
MIL-F-1183	UNION END GLOBE	NOS. 1, 181, 90-93	LUNK'NH'M'R FIG. 2100
B16.24	WATER REGULATING VALVES	NO. 96	
B16.24	4 VALVE SIMPLEX MANIFOLD (AIR OPER)	NO. 96	
	3 VALVE		
	3 VALVE		
	3 VALVE		
	3 VALVE		
	3 VALVE (MANUAL OPER.)		
B16.24	GATE (AIR OPER)		
	GLOBE STOP CHECK		
	GATE		
	~~GLOBE STOP CHECK~~		
	~~ANGLE STOP CHECK~~		
B16.24	GATE (AIR OPER)	NO. 96	
	GLOBE STOP-CHECK	96	
B16.24	BALL-(AIR OPERATED) AIR OPEN SPRING CLOSE	NO. 96	JAMESBURY STYLE DISP W/STUDS ACTUATORS
	HORIZONTAL SWING CHECK	10, 90-93	LUNK'NH'M'R FIG. 1402
	BALL-(AIR OPERATED) AIR OPEN SPRING CLOSE	NO. 96	JAMESBURY STYLE DISP W/STUDS ACTUATORS
—	PRIMING VALVE	—	VENDOR FURN.
B2.1	SOLENOID VALVE	NO. 96	
B16.24	GATE	NOS. 2, 6, 90-93	LUNK'NH'M'R FIG. 1404
	SWING CHECK	10, 90-93	1402
	GLOBE STOP CHK	6, 90-93	1400X
	SWING CHECK	~~10, 90-93~~	~~1402~~
~~B2.1~~		90-93	POWELL FIG. 560-Y
B2.1	GLOBE	NOS 1, 90-93	POWELL FIG. 110
		1, 90-93	
		1, 90-93	
B16.24	GATE	2, 6, 90-93	LUNK'NH'M'R FIG. 1404
	4 VALVE SIMPLEX MANIFOLD (AIR OPER)	96	
	6 VALVE		
B2.1	HORIZONTAL SWING CHECK	NOS 90-93	POWELL FIG. 560-Y
	BALL-(AIR OPERATED) SPRING OPEN AIR CLOSE	NO. 96	
B16.24	HORIZONTAL SWING CHECK	10, 90-93	LUNK'NH'M'R FIG. 1402
	HORIZONTAL SWING CHECK		
B16.24	GLOBE W/O HAND WHEEL, W/STEM CAP	NOS 96	LUNK'NH'M'R FIG. 1400 MOD
	GATE	2, 6, 90-93	1404
	SWING CHK	10, 90-93	1402
	~~BUTTERFLY W/LEVER OPERATOR~~	~~96, 90-93~~	~~KEYSTONE #129~~
MIL-F-1183	UNION END GLOBE	1, 181, 90-93	LUNK'NH'M'R FIG. 2100
B16.24	GLOBE STOP CHECK	6, 90-93	1400X
—	TEMPERATURE CONTROL VALVE	NO. 96	G.E. DWG 41A219999
—	SWING CHECK-UNION ENDS	NOS. 28, 90-93	LUNK'NH'M'R FIG. 2103
—	CONTROL VALVE	NO. 96	VENDOR FURN.
—	GATE VALVE		
—	GLOBE VALVE		
B16.24	GLOBE VALVE	NOS 1, 90-93	POWELL FIG. #104
—	BUTTERFLY VALVE (ELECT OPERATED)	96	VENDOR FURN.
MIL-F-1183	GLOBE, UNION END, W/LOCK SHIELD	1, 28, 90-93	LUNK'NH'M'R FIG. #2100 MOD
B16.24	SWING CHECK	NOS 10, 90-93	1402
—	MOTOR OPERATED VALVE		VENDOR FURNISHED
—	THROTTLING VALVE (GATE)		
B16.24	RELIEF VALVE (BILGE SUMP PUMP)	NOS 96	ORDER ON REF #2
B2.1	GATE S.W.D. RISING STEM	1, 90-93	POWELL FIG. #375
B16.24	GLOBE VALVE	NOS 2, 6, 90-93	LUNK'NH'M'R FIG. #1400
B16.24	GATE	NOS 2, 6, 90-93	POWELL FIG. # 1503TF
			1503TF

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST O

UNIT 185-07-5	UNIT 182-12-7	REQUISITION NO.				JOB NO.	ALT. NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	°F	PRESS. STD	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.
		503800-A				182		F-100	1	—	50	85	150#	—	BRONZE	—
		503800-A						F-101	1	—	225	85	150#	—		—
		503800						F-102	1	8"			150#	—		—
		503800						F-103	1	8"				—		—
		504500-G					1	F-104	2	1"			150#	—		—
		504500						F-105	3	8"			150#	—		B-62
								F-106	1	6"				—		
	2		504500-K				3	F-107	3	4"				—		
								F-108	1	4"				—		
								F-109	1	4"				—		
	1		504500-K				3	F-110	3	3"				—		
		—	—	—			3	F-111	2	3"x3"			125#	—		—
	2	504500	504500-K				3	F-112	24	1½"			150#	—		B-61
								F-113	1	1"				—		B-61
	1							F-114	8	½"			200#	—		B-61
		—	—	—			3	~~F-115~~	~~1~~	~~3"x3"~~			~~125#~~	—		—
	6	504500-K					3,4	F-116	6	2½"			150#	—		B-62
	1						3,4	F-117	1	2½"				—		
	1						3	F-118	1	2"			200#	—		
	1						3	F-119	1	2"				—		
		503800-A	—	—		372		AC-100	1	—	29	85	150#	—	BRONZE	—
		503800-A	—	—				AC-101	1	—			150#	—		—
		503800	—	—				AC-102	4	10"			150#			—
								AC-103		1"						
		503800	—	—				AC-104	1	8	29	85	150#	—	BRONZE	—
		504500-J	—	—				AC-105	1	8"				—		—
		504500-A	—	—				AC-106	1	4"				—		—
		500018	—	—				AC-107	1	4"				—		—
		504500-G	—	—			1	AC-108	1	1"			150#	—		—
		503800	—	—			1,3	AC-109	3	6"			150#	—		—
							1	~~AC-110~~	~~1~~	~~10"~~			~~150#~~	—	BRONZE	B-62
		504500						AC-111	1	10"			150#	—	BRONZE	B-62
		503800	—	—			1,3	AC-112	1	5"				—		—
		504500	504500-H(2)				1,3	~~AC-113~~	~~3~~	~~5"~~				—		B-62
								AC-114	1	4"				—		
1		503800-A	—	—				AC-115	1	—	200	180	—	—		—
1		503800-A	—	—				AC-116	1	—			—	—		—
		504500						AC-117	3	4"	29	85	150#	—		B-62
		504500-D					1	AC-118	1	4"			200#	—		B-61
		—	—	—			3	AC-119	1	6"x6"			150#	—		—
		504500						AC-120	1	2½"				—		B-62
								AC-121	1	2"			200#	—		B-61
								AC-122	1	2½"			150#	—		B-62
								AC-123	1	2"			200#	—		B-61
			504500-P				4	AC-124	5	1½"			150#	—		
								AC-125	2	1½"			200#	—		
								AC-126	3	1½"				—		
								AC-127	5	¾"				—		
								AC-128	1	1¼"				—		
	1							AC-129	1	1½"				—		
			504500-K				1,3	AC-130	3	1"				—		
			504500-K	504500-T			3,6	AC-131	4	1"				—		
								AC-132	2	1"				—		
								AC-133	1	1"				—		
			504500-T				6	AC-134	9	¾"				—		
			504500-C	504500-V			1,8	AC-135	16	½"				—		
							1,8	AC-136	6	½"				—		
			504500-P	504500-R	504500-T		4,5,6	AC-137	14	¼"				—		
		—	—	—				~~AC-138~~	~~1~~	~~⅜"~~				—		
		—	—	—				AC-139	1	¾"				—		
		500026-A	—	—				AC-140	4	4"			150#	—		—
		504500-D					1	AC-141	23	5"			200#	—		B-62
		500028	—	—				AC-142	2	3"			150#	—		—
		500026	—	—				AC-143	2	2½"				—		—
		504500					1	AC-144	8	2½"			200#	—		B-62
								AC-145	2	2"				—		B-61
4							4	AC-146	4	4"	200	180	150#	—		B-62
1								AC-147	1	3"				—		
1								AC-148	1	2½"				—		

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-5

FRAME 2 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-5

FRAME 3 OF 4

LIST OF PIPES

REQUISITION NO			JOB NO.	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF #1
504544-B			372	1,3	AC-17	2'-0		2'-0	8"	120	.719	29#	85°	B36.10	CARBON STEEL - WELDED	A-53 TYPE S GRADE B	OVBD DISCH	II	SERVICE	NOS 128, 135
504544				1	AC-18	8'-0		8'-0	4"	80	.337									
504552				1	AC-19	3'-0		3'-0	3½"	—	.095			—	90-10 COPPER NICKEL - SEAMLESS	B466 ALLOY 706				132
				1	AC-20	12'-0		12'-0	12"	—	.250	30#		—	- WELDED	B467 ALLOY 706	DISTILLER TO BRINE PUMP			
				1	AC-21	10'-0		10'-0	6"	—	.134			—			BRINE PUMP TO VALVE (AC-164)			
				1	AC-22	60'-0		60'-0	5"	—	.125			—			S.W. FEED PUMP TO DISTILLATE COOLER			
				1,4	AC-23	24'-0		24'-0	½"	—	.066			—	SEAMLESS	B466 ALLOY 706	BRINE PUMP SEAL			
PIPE SHT. 1606				1	AC-24	3'-0		3'-0	6"	80	.432			B36.10	CARBON STEEL	A53 TYPE S GRADE B	VALVE (AC-164) TO OVBD DISCH			128, 135
504544B				2,3	AC-25	30'-0"		30'-0"	4"	40	.237						DISTILLER R.V TO BILGE			
				1	AC-26	3'-0"		3'-0"	6"	120	.562	29#	85	B36.10	CARBON STEEL - WELDED	A-53 TYPE S GRADE B	S.S. DSL GEN OVBD. DISCH.	II	SERV.	NOS. 128, 135
504552-C				1	AC-27	1'-0"		1'-0"	1¼"	REG	.146			-	I.P.S. 90-10 CU-NI SEAMLESS PIPE (1.66" O.D.)	B466 ALLOY 706				132
	504552-C IX	504552-F		1,4,6	AC-28	220'-0"		220'-0"	6"	—	.134			-	90-10 COPPER NICKEL - WELDED	B467 ALLOY 706				141
PIPE SHT. 1606			181	1	B-1	30'-0"		30'-0	12"	40	.406	30#	85°	B36.10	CARBON STEEL - GALVANIZED	A-53 TYPE S GRADE B		II	34#	NOS. 128, 135
				1,4,5,7	B-2	487'		487'	8"	40	.322									
				1	B-3	10'-0"		10'-0	8"	80	.500									
				1	B-4	275'-0"		275'-0	6"	40	.280									
504544	504544-B			1,3	B-5	210'-0"		210'-0"	4"		.237					[illegible]				
	504544-A	504544-D		2,3,5	B-6	100'-0"		100'-0"	3"		.216									
	504544-B			1,3	B-7	70'-0"		70'-0"	2½"		.203									
				1,3	B-8	10'-0"		10'-0"	2½"	80	.276									
	504544-B			1,3,4,6,7	B-9	550'-0"	10'-0"	560'-0"	2"	40	.154									
	504544-G			2,4,6,9	B-10		186'-0"	186'-0"	1½"		.145									
	504544-G			1,4,9	B-11		100'-0"	100'-0"	1¼"		.140									
	504544-C			1,3,4	B-12		15'-0"	15'-0"	1"		.133									
				1,3	B-13		60'-0"	60'-0	½"		.109									
				1,3	B-14		1'-0"	1'-0	¼"		.088									
504544-A				2	B-15	140'-0"		140'-0	10"	40	.365					A-53 TYPE E GRADE B	HEELING SYS.			
504544-A				2	B-16	2'-0"		2'-0"	10"	120	.843						OVBD			
504544-B				3	B-17	5'-0"		5'-0"	12"		1.000"						OVBD. DISCH.			
				3	B-18	1'-0"		1'-0"	6"		.562"									
				3	B-19	1'-0"		1'-0"	4"		.438"									
				3	B-20		280'-0"	280'-0"	¾"	40	.113"									
504544-B IX				3,5	B-21	150'		150'-0"	3"		.216				BLK		BOILER WASHDOWN DRAINS			
PIPE SHT 1606				5	B-24	2'-0"		2'-0"	8"		.358				GALV		INTER. SHORE CONN.			

LIST OF VALVES

REQUISITION NO		JOB NO.	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD.	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF #1	MANUFACTURER DWG. OR FIG. NO.
504500		372		AC-149	1	3"	200	180	150#	—	BRONZE	B-61	MONEL	MONEL	MONEL	—	FLANGED, F.F.D.	B16.24	GLOBE	NOS. 6, 90-93	LUNK'NH'M'R. FIG. 1400
				AC-150	1	2½"				—						—				6, 90-93	1400
				AC-151	2	2½"				—		B61				—	FLGD INLET X HOSE OUTLET	B16.24/B2.4	ANGLE HOSE W/CAP & CHAIN	6, 36, 90-93	WILLIAMS FIG. 215F
				AC-152	1	2½"				—						—			GLOBE HOSE W/CAP & CHAIN	6, 36, 90-93	115F
				AC-153	1	2½"				—		B62				—	FLANGED, F.F.D.	B16.24	GLOBE STOP-CHECK	NOS. 6, 90-93	LUNK'NH'M'R 1400-X
—	—			AC-154	1	1¼"				—		—	—	—	—	—		B16.24	RELIEF VALVE (SET AT 225 PSIG)	—	ORDER ON REF #2
—	—			AC-155	1	½"				—		—	—	—	—	—				—	
504500				AC-156	1	¾"			200#	—		B-61	MONEL	MONEL	MONEL	—	SIL-BRZD	MIL-F-1183	UNION END GLOBE	NOS. 1, 181, 90-93	LUNK'NH'M'R. FIG 2100
500026-A	—		4	AC-157	4	4"	29	85	150#	—		—	—	—	—	—	FLANGED, F.F.D.	B16.24	WATER REGULATING VALVES	NO. 96	
500026-A	—			AC-158	1	2"				—		—	—	—	—	—					
503800-A		181	1	B-100	1	—	25		150#	—	BRONZE	—	BRONZE	BRONZE	BRONZE	—	FLANGED, F.F.D.	B16.24	4 VALVE SIMPLEX MANIFOLD (AIR OPER)	NO. 96	
				B-101	1	—				—		—				—			3 VALVE		
				B-102	1	—				—		—				—			3 VALVE		
				B-103	1	—				—		—				—			3 VALVE		
				B-104	1	—				—		—				—			3 VALVE		
				B-105	1	—				—		—				—			3 VALVE (MANUAL OPER.)		
503800				B-106	1	8"				—		—				—		B16.24	GATE (AIR OPER)		
				B-107	1	8"				—		—				—			GLOBE STOP CHECK		
				B-108	2	6"				—		—				—			GATE		
—	—		1	~~B-109~~	2	4"													~~GLOBE STOP CHECK~~		
—	—		1	~~B-110~~	3	4"													~~ANGLE STOP CHECK~~		
503800	—			B-111	4	12"			150#	—	BRONZE	B-62	BRONZE	BRONZE	BRONZE	—	FLANGED, F.F.D.	B16.24	GATE (AIR OPER)	NO. 96	
504500-H			1,3	B-112	1	2½"				—						—			GLOBE STOP-CHECK	96	
504500-E	—		1	B-113	3	8"			150#	—			MONEL	MONEL	MONEL	—	FLANGED, F.F.D.	B16.24	BALL-(AIR OPERATED) AIR OPEN SPRING CLOSE	NO. 96	JAMESBURY STYLE [illegible] ACTUATORS
504500-H			1,3	B-114	1	8"				—						MONEL			HORIZONTAL SWING CHECK	10, 90-93	LUNK'NH'M'R FIG. 1402
			1	B-115	1	6"				—						MONEL					
504500-E			1	B-116	2	6"				—						—			BALL-(AIR OPERATED) AIR OPEN SPRING CLOSE	NO. 96	JAMESBURY STYLE [illegible] ACTUATORS
—	—		4	B-117	6	—			—	—		—	—	—	—	—	—	—	PRIMING VALVE	—	VENDOR FURN.
504500-N	—		4	B-118	6	1¼"			—	—			—	—	—	—	SCRD.	B2.1	SOLENOID VALVE	NO. 96	
504500				B-119	2	6"			150#	—	BRONZE	B-62	BRONZE	BRONZE	BRONZE	—	FLANGED, F.F.D.	B16.24	GATE	NOS. 2, 6, 90-93	LUNK'NH'M'R. FIG. 1404
			1	~~B-120~~	2	8"				—					—	MONEL			~~SWING CHECK~~	10, 90-93	1402
504500-H			1,3,4	B-121	1	2½"				—					BRONZE	—			GLOBE STOP CHK	6, 90-93	1400X
			1	~~B-122~~	1	3"										MONEL			~~SWING CHECK~~	10, 90-93	1402
			1	~~B-123~~	2	2"			200#			B61				MONEL	SCRD.	B2.1		90-93	POWELL FIG. 560-Y
504500	W/504500-H		1	B-124	6	1½"	25		200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCRD.	B2.1	GLOBE	NOS 1, 90-93	POWELL FIG. 110
				B-125	1	1"				—						—				1, 90-93	
Supply			4	B-126	11	½"				—						—				1, 90-93	
504500-C			1	B-127	1	3"			150#	—		B-62				—	FLANGED, F.F.D	B16.24	GATE	2, 6, 90-93	LUNK'NH'M'R FIG. 1404
503800-A			1	B-128	1	—				—		—	BRONZE	BRONZE	BRONZE	—			4 VALVE SIMPLEX MANIFOLD (AIR OPER)	96	
			1	B-129	1	—				—		—				—			6 VALVE		
504500-H			1	B-130	2	2"			200#	—		B-62	MONEL	MONEL	MONEL	MONEL	SCRD.	B2.1	HORIZONTAL SWING CHECK	NOS 90-93	POWELL FIG. 560-Y
504500-E			1	B-131	2	2"			150#	—							FLANGED, F.F.D.		BALL-(AIR OPERATED) SPRING OPEN AIR CLOSE	NO. 96	
504500-H			1	B-132	3	10"				—						MONEL	FLANGED, F.F.D.	B16.24	HORIZONTAL SWING CHECK	10, 90-93	LUNK'NH'M'R FIG. 1402
			1	B-133	2	2½"				—							FLANGED, F.F.D.		HORIZONTAL SWING CHECK		
504500-F		372	1,3	AC-159	1	6"	29#	85	150#	—	BRONZE	B-61	MONEL	MONEL	MONEL	—	FLANGED, F.F.D.	B16.24	GLOBE W/O HAND WHEEL, W/STEM CAP	NOS 96	LUNK'NH'M'R FIG. [illegible]
504500-C	504500-K		1,3	AC-160	4	6"				—		B-62				—			GATE	2, 6, 90-93	1404
			1	AC-161	1	10"				—					—	MONEL			SWING CHK	10, 90-93	1402
			1	~~AC-162~~	1	8"	30#		200#				~~BUNA N~~		~~MONEL~~		~~WAFER~~	—	~~BUTTERFLY W/LEVER OPERATOR~~	95, 90-93	~~KEYSTONE # [illegible]~~
504500-C			1	AC-163	1	½"			200#			B-61	MONEL			—	SIL-BRZD	MIL-F-1183	UNION END GLOBE	1, 181, 90-93	LUNK'NH'M'R FIG. 2100
			1	AC-164	1	6"			150#			B-62				—	FLANGED, F.F.D.	B16.24	GLOBE STOP CHECK	6, 90-93	1400X
500053-A	—		1,8	AC-165	1	1½"			—	—	—	—	—	—	—	—	SCRD.	—	TEMPERATURE CONTROL VALVE	NO. 96	G.E. DWG 41A219999
504500-H			1	AC-166	2	1"			200#	—	BRONZE	B-61	MONEL	MONEL	—	MONEL	SIL-BRZD	—	SWING CHECK-UNION ENDS	NOS. 28, 90-93	LUNK'NH'M'R FIG 2103
500047			1,8	AC-167	1	1"	—	—	—	—	—	—	—	—	—	—	—	—	CONTROL VALVE	NO. 96	VENDOR FURN.
			1,8	AC-168	2	1"	—	—	—	—	—	—	—	—	—	—	—	—	GATE VALVE		
			1,8	AC-169	1	1"	—	—	—	—	—	—	—	—	—	—	—	—	GLOBE VALVE		
504500-K			3	AC-170	1	1"	29	85	150#	—	BRONZE	B-62	MONEL	MONEL	MONEL	—	FLANGED, F.F.D	B16.24	GLOBE VALVE	NOS 1, 90-93	POWELL FIG #104
500026-A			3,8	AC-171	8	6"				—	—	—	—	—	—	—	WAFER	—	BUTTERFLY VALVE (ELECT. OPERATED)	96	VENDOR FURN
504500-V	~~"REMOVE NOTE 96"~~ [illegible]		3,8	AC-172	1	1½"			200#	—	BRONZE	B-61	MONEL	MONEL	MONEL	-	SIL-BRAZE	MIL-F-1183	GLOBE, UNION END, W/ LOCK SHIELD	1, 28, 90-93	LUNK'NH'M'R FIG #2100 [illegible]
504500-P			4	AC-173	1	4"			150#	—		B-62				MONEL	FLANGED F.F.D	B16.24	SWING CHECK	NOS 10, 90-93	1402
21-509778			6	AC-174	1	1½"	—	—	—	—	—	—	—	—	—	—	SCRD	—	MOTOR OPERATED VALVE		VENDOR FURNISHED
			6	AC-175	1	1½"	—	—	—	—	—	—	—	—	—	—		—	THROTTLING VALVE (GATE)		
—			1,8	B-134	1	2"	25#		150#								FLANGED, F.F.D	B16.24	RELIEF VALVE (BILGE SUMP PUMP)	NOS 96	ORDER ON REF #2
504500-K			1	B-135	1	1½"			200#		BRONZE	B62	BRONZE	BRONZE	BRONZE	—	SCRD	B2.1	GATE S.W.D. RISING STEM	1, 90-93	POWELL FIG# 375
504500-P			4	B-136	2	2"			150#	—						—	FLANGED F.F.D.	B16.24	GLOBE VALVE	NOS 2, 6, 90-93	LUNK'NH'M'R FIG #1400
			4	B-137	2	3"			150#	B16.10	CAST ST'L	A-216 GR WCB	STN ST'L	STN ST'L	STN. ST'L	—	FLANGED F.F.D	B16.24	GATE	NOS 2, 6, 90-93	POWELL FIG# 1503FE
504500-R			5	B-138	1	2"			150#				BRZ	BRZ	BRZ	—					1503FE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-5

FRAME 4 OF 4

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF PIPES

REQUISITION NO.	JOB NO.	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERV
504544-B	372	1,3	AC-17	2'-0		2'-0	8"	120	.719	29#	85°	B36.10	CARBON STEEL - WELDED	A53 TYPE E GRADE B	OVBD DISCH
504544		1	AC-18	8'-0		8'-0	4"	80	.337						
504552		1	AC-19	3'-0		3'-0	3½"	—	.095			—	90-10 COPPER NICKEL - SEAMLESS	B466 ALLOY 706	
		1	AC-20	12'-0		12'-0	12"	—	.250	30#		—			
		1	AC-21	10'-0		10'-0	6"	—	.134			—	- WELDED	B467 ALLOY 706	DISTILLER TO BRINE
		1	AC-22	60'-0		60'-0	5"	—	.125			—			BRINE PUMP TO VALV
PIPE SHT. 1606		1,4	AC-23	24'-0		24'-0	½"	—	.065			—			S.W. FEED PUMP TO
		1	AC-24	3'-0		3'-0	6"	80	.432			—	SEAMLESS	B466 ALLOY 706	BRINE PUMP SEAL
504544B		2,3	AC-25	30'-0"		30'-0"	4"	40	.237			B36.10	CARBON STEEL	A53 TYPE S GRADE B	VALVE (AC-164) TO OV
		3	AC-26	3'-0"		3'-0"	6"	120	.562						DISTILLER R.V TO BILG
504552-C		3	AC-27	1'-0"		1'-0"	1¼"	REG	.146	29#	85	B36.10	CARBON STEEL - WELDED	A53 TYPE E GRADE B	S.S. DSL GEN OVBD. DISCH.
504552-C(1) 504552-F		1,4,6	AC-28	220'-0"		220'-0"	6"	—	.134			—	I.P.S. 90-10 CU-NI SEAMLESS PIPE (1.66 O.D.)	B466 ALLOY 706	
PIPE SHT. 1606	181	1	B-1	30'-0"		30'-0	12"	40	.406			—	90-10 COPPER NICKEL - WELDED	B467 ALLOY 706	
		1,4,5,7	B-2	487'		487'	8"	40	.322	30#	85°	B36.10	CARBON STEEL - GALVANIZED	A53 TYPE E GRADE B	
		1	B-3	10'-0"		10'-0	8"	80	.500						
		1	B-4	275'-0"		275'-0	6"	40	.280						
504544 504544-B		1,3	B-5	210'-0"		210'-0"	4"		.237						
504544-A 504544-D		2,3,5	B-6	100'-0"		100'-0"	3"		.216					A53 TYPE S GR.B	
504544-B		1,3	B-7	70'-0"		70'-0"	2½"		.203						
		1,3	B-8	10'-0"		10'-0"	2½"	80	.276						
504544-B		1,3,4,6,7	B-9	550'-0	10'-0"	560'-0"	2"	40	.154						
504544-B		2,4,6,9	B-10		186'-0"	186'-0"	1½"		.145						
504544-G		1,4,9	B-11		100'-0"	100'-0"	1¼"		.140						
504544-C		1,3,4	B-12		15'-0"	15'-0"	1"		.133						
		1,3	B-13		60'-0"	60'-0	½"		.109						
		1,3	B-14		1'-0'	1'-0	¼"		.088						
504544-A		2	B-15	140'-0"		140'-0"	10"	40	.365					A53 TYPE E GRADE B	HEELING SYS.
504544-A		2	B-16	2'-0"		2'-0"	10"	120	.843						OVBD
504544-B		3	B-17	5'-0"		5'-0"	12"		1.000"						OVBD. DISCH.
		3	B-18	1'-0"		1'-0"	6"		.562"						
		3	B-19	1'-0"		1'-0"	4"		.438"						
		3	B-20		280'-0	280'-0"	¾"	40	.113"						
504544-B(1) P.B.SHT 1606		3,5	B-21	150'		150'-0"	3"		.216				BLK		BOILER WASHDOWN DRAINS
		5	B-24	2'-0"		2'-0"	6"		.258				GALV		INTER. SHORE CONN.

LIST OF VALVES

REQUISITION NO.	JOB NO.	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	
504500	372		AC-149	1	3"	200	180	150#	—	BRONZE	B-61	MONEL	MONEL	MONEL	—			
			AC-150	1	2½"				—						—	FLANGED, F.D.	B16.24	GLOBE
			AC-151	2	2½"				—		B61				—			
			AC-152	1	2½"				—						—	FLGD INLET X HOSE OUTLET	B16.24/B2.4	ANGLE
			AC-153	1	2½"				—		B62				—			GLOBE
—			AC-154	1	1¼"				—			—	—	—	—	FLANGED, F.D.	B16.24	GLOBE
			AC-155	1	½"				—		—	—	—	—	—		B16.24	RELIEF
504800			AC-156	1	¾"			200#	—		—				—			
500026-A		4	AC-157	4	4"	29	85	150#	—		B-61	MONEL	MONEL	MONEL	—	SIL-BRZD	MIL-F-1183	UNION
500026-A			AC-158	1	2"				—		—	—	—	—	—	FLANGED, F.D.	B16.24	WATER
503800-A	181	1	B-100	1	—	25		150#	—	BRONZE	—				—			
			B-101	1	—				—		—	BRONZE	BRONZE	BRONZE	—	FLANGED, F.D.	B16.24	4 VALVE
			B-102	1	—				—		—				—			3 VALVE
			B-103	1	—				—		—				—			3 VALVE
			B-104	1	—				—		—				—			3 VALVE
503800			B-105	1	—				—		—				—			3 VALVE
			B-106	1	8"				—		—				—			3 VALVE
			B-107	1	8"				—		—				—		B16.24	GATE
—			B-108	2	6"				—		—				—			GLOBE
—		1	B-109	2	4"				—		—				—			GATE
503800		1	B-110	3	4"				—						—			GLOBE
504500-H			B-111	4	12"			150#	—	BRONZE	B-62	BRONZE	BRONZE	BRONZE	—			ANGLE
504500-E		1,3	B-112	1	2½"				—						—	FLANGED, F.D.	B16.24	GATE
504500-H		1	B-113	3	8"			150#	—			MONEL	MONEL	MONEL	—			GLOBE
		1,3	B-114	1	8"				—						—	FLANGED, F.&D.	B16.24	BALL-(A
504500-E		1	B-115	1	6"				—						MONEL			HORIZON
—		1	B-116	2	6"				—						MONEL			
504500-H		4	B-117	6	—			—	—		—	—	—	—	—	—	—	BALL-(A
504500		4	B-118	6	1½"			—	—		—	—	—	—	—	—	—	PRIMING
			B-119	2	6"			150#	—						—	SCRD.	B2.1	SOLENO
504500-H		1	B-120	2	8"				—	BRONZE	B-62	BRONZE	BRONZE	BRONZE	—	FLANGED, F.D.	B16.24	GATE
		1,3,4	B-121	1	2½"				—						MONEL			SWING
		1	B-122	1	3"				—					BRONZE	—			GLOBE
		1	B-123	2	2"			200#	—						MONEL			SWING
504500 504500-H		1	B-124	6	1½"	25		200#	—	BRONZE	B-61				MONEL	SCRD.	B2.1	
Sully		1	B-125	1	1"				—		B-61	BRONZE	BRONZE	BRONZE	—	SCRD.	B2.1	GLOBE
504500-C		4	B-126	11	½"				—						—			
503800-A		1	B-127	1	3"			150#	—						—			
		1	B-128	1	—				—		B-62				—	FLANGED, F.D.	B16.24	GATE
504500-H		1	B-129	1	—				—		—	BRONZE	BRONZE	BRONZE	—			4 VALVE
504500-E		1	B-130	2	2"			200#	—						—			6 VALVE
504500-H		1	B-131	2	2"			150#	—		B-62	MONEL	MONEL	MONEL	MONEL	SCRD.	B2.1	HORIZONT
		1	B-132	3	10"				—						—	FLANGED, F.D.		BALL-(AI
504500-F		1	B-133	2	2½"				—						MONEL	FLANGED, F.&D.	B16.24	HORIZONT
504500-C 504500-K	372	1,3	AC-159	1	6"	29#	85	150#	—	BRONZE	B-61	MONEL	MONEL	MONEL		FLANGED, F.&D.		HORIZONT
		1,3	AC-160	4	6"				—		B-62				—	FLANGED, F.D.	B16.24	GLOBE
		1	AC-161	1	10"				—						—			GATE
504500-C		1	AC-162	1	6"	30#		200#						—	MONEL			SWING
		1	AC-163	1	½"			200#				BUNA-N		MONEL		WAFER		BUTTE
500026-A		1	AC-164	1	6"			150#			B-61	MONEL			—	SIL-BRZD	MIL-F-1183	UNION
504500-H		1,8	AC-165	1	1½"			—	—		B-62	—	—	—	—	FLANGED, F.D.	B16.24	GLOBE
500047		1	AC-166	2	1"			200#	—	—	—	—	—	—	—	SCRD.	—	TEMPERA
		1,8	AC-167	1	1"	—	—	—	—	BRONZE	B-61	MONEL	MONEL	—	MONEL	SIL-BRZD	—	SWING C
		1,8	AC-168	2	1"	—	—	—	—	—	—	—	—	—	—	—	—	CONTROL
		1,8	AC-169	1	1"	—	—	—	—	—	—	—	—	—	—	—	—	GATE VA
504500-K		3	AC-170	1	1"	29	85	150#	—	—	—	—	—	—	—	—	—	
500026-A		3,8	AC-171	8	6"				—	BRONZE	B-62	MONEL	MONEL	MONEL	—	FLANGED, F.D.	B16.24	GLOBE VA
504500-Y "REMOVE NOTE [illegible]"		3,8	AC-172	1	1½"			200#	—	—	—	—	—	—	—	WAFER		BUTTERFLY
504500-P		4	AC-173	1	4"			150#		BRONZE	B-61	MONEL	MONEL	MONEL	—	SIL-BRAZE	MIL-F-1183	GLOBE, UNI
21-509778		4	AC-174	1	1¼"	—	—	—	—		B-62				MONEL	FLANGED F.D.	B16.24	SWING CH
		4	AC-175	1	1¼"	—	—	—	—	—	—	—	—	—	—	SCRD	—	MOTOR O
—																	—	THROTT
504500-K		1,8	B-134	1	2"	25#		150#										
504500-P		1	B-135	1	1½"			200#								FLANGED, F.D.	B16.24	RELIEF VA
		4	B-136	2	2"			150#	—	BRONZE	B62	BRONZE	BRONZE	BRONZE	—	SCRD	B2.1	GATE S.W.
504500-R		4	B-137	2	3"			150#	B16.10	CAST ST'L	A-216 GR WCB	STN ST'L BRZ	STN ST'L BRZ	STN ST'L BRZ	—	FLANGED F.D.	B16.24	GLOBE VA
		5	B-138	1	2"			150#							—	FLANGED F.D.	B16.24	GATE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-6

FRAME 1 OF 4

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	JOB NO.	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
			2,4,5	F-200	22	8"	150#	85°	225#	150#	B16.5	90-10 CU NI	—	SLIP ON FLANGE F&D FLAT FACED (MIL-C-15726-E FORGINGS)	VALVES F-100 THRU F-103	182		NOTES 90-93	COONEY
				F-201	4	6"							—		VALVE F-106				
				F-202	10	4"					B16.24	BRONZE	B-62	FLANGE SIL-BRAZ F&D					FLAGG FLOW FIG 5070
			3,4	F-203	13	3"													
			2,3	F-204	15	2½"													
			4,5	F-205	24	1½"													
				F-206	1	1¼"									EDUCTOR - STEERING GEAR RM				
			1,2	F-207	11	1"									VALVE F-113				
			1	F-208	2	5"					B16.5	90-10 CUNI	—	SLIP ON FLANGE F&D FLAT FACED (MIL-C-15726-E FORGINGS)	VALVE F-101 OUTLET & [illegible]				
			2	AC-200	30	10"	29#	85°	SERVICE	150#	B16.5	90-10 CU-NI	—	SLIP ON FLANGE F&D FLAT FACED (MIL-C-15726-E FORGINGS)		372		NOTES 90-93	COONEY
			2	AC-201	30	8"							—						
			2,3,6	AC-202	120	5"							—						
			2,3	AC-203	60	4"					B16.24	BRONZE	B-62	FLANGE SIL-BRAZ F&D					FLAGG FLOW FIG 5070
			1,3,6,8	AC-204	47	2½"													
			2,3	AC-205	20	2"													
			3	AC-206	9	1½"													
				AC-207	4	1¼"													
			3,4	AC-208	7	1"													
			6	AC-209	10	¾"													
				AC-210	2	[illegible]								REDUCING				154, 90-93	
				AC-211	1	3½"									HEADER TO TK. CL'G. PUMP SUCT			90-93	
			1,6,7	AC-212	14	3"													
				AC-213															
			2,3	AC-214	62	6"					B16.5	90-10 CU.NI.	—	SLIP-ON, FLAT FACED F&D (MIL-C-15726-E FORGINGS)					COONEY
			2,4,8	AC-215	10	½"					B16.24	BRONZE	B62	SIL-BRZ					FLAGG FLOW 5070
			2	AC-216	2	12"					B16.5	90-10 CUNI	—	SLIP-ON FF (MIL-C-15726-E FORGINGS)					COONEY
			2	AC-217	1	10"						FGD STL. BLK	A-105						TUBE TURN PT.50
			2	AC-218	1	8"													
			2	AC-219	1	6"													
			2,3	AC-220	5	6"													
			2	AC-221	1	4"	—												
			6	AC-222	2	5"													
			1	AC-223	1	12"	29#	85°	SERVICE	150#	MIL-F-20042C TY-EF	90-10 CUNI		FLANGE SLIP ON F&D					
			1	AC-224	1	5"													
			1	AC-225	1	½"						BRONZE		SILBRAZE					FLAGG FLOW 5075

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	JOB NO.	CODE NO.	REMARKS	CAT. OR DRWG. NO.
			2,4,5	F-300	22	8"	150#	85°	225#	150#	B16.21	CLOTH INSERTED SBR RUBBER	D2000 GRAA-805	GASKET FULL FACE - 1/8" THK		182			JOHNS-MANVILLE #109
				F-301	4	6"													
			4	F-302	9	4"													
			2,4	F-303	11	3"													
			2,3	F-304	17	2½"													
			4,5	F-305	24	1½"													
				F-306	1	1¼"													
			1,2	F-307	12	1"													
			1	F-308	2	5"													
			2	AC-300	22	10"	29#	85°	SERVICE	150#	B16.21	CLOTH INSERTED SBR RUBBER	D2000 GR AA-908	GASKET FULL FACE - 1/8" THK		372			JOHNS-MANVILLE #109
			2	AC-301	23	8"													
			2,3	AC-302	48	6"													
			2	AC-303	52	5"													
			2,3	AC-304	49	4"													
			1	AC-305	12	3"													
			2,3	AC-306	27	2½"													
				AC-307	16	2"													
			3	AC-308	5	1½"													
				AC-309	4	1¼"													
			4	AC-310	9	1"													
			4,6	AC-311	10	¾"													
			8	AC-312	10	½"													
				AC-313	1	3½"													
			2	AC-314	2	12"													
			2	AC-315	2	6"								RING TYPE					
			1	AC-316	1	12"								FULL FACE					

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO.	BOLTING IDENT NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD	NUTS SEMI-FINISHED MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	SERVICE	JOB NO.	CODE NO.	REMARKS
			2,4,5	F-400	180								150#	85°	CARBON STL HEAVY HEX HEAD A-307 GR B GALV	¾"	3½"	B18.2.1 B1.1 UNC-2A	CARBON STL HEAVY HEX A-307 GR B GALV	¾"	B18.2.2 B1.1 UNC-2B	F-200	182		
				F-401	40											¾"	3¼"			¾"		F-201 & F-208			
			1	F-402	108											⅝"	2½"			⅝"		F-202, F-203 & F-204			
			1,5	F-403	100											½"	2"			½"		F-205			
			1,2	F-404	44											½"	1¾"			½"		F-207 & F-206			
			2	F-405	32										STAIN. STL. A-193 GR B8M	⅝"	2½"		STAIN. ST'L A-193 GR 8M	⅝"		4" FLANGES ON SHORE CONN			
			2	F-406	16												2¼"					2½"			
			2	AC-400	276								29#	85°	CARBON STL HEAVY HEX HEAD A-307 GR B GALV	⅞"	3¾"	B18.2.1 B1.1 UNC-2A	CARBON STL HEAVY HEX A-307 GR B GALV	⅞"	B18.2.2 B1.1 UNC-2B	AC-200	372		
			2	AC-401	216											¾"	3½"			¾"		AC-201			
			2,3	AC-402	552											¾"	3¼"			¾"		AC-202, AC-214			
			2,3	AC-403	612											⅝"	3"			⅝"		AC-203 & AC-204			
				AC-404	64											⅝"	2¾"			⅝"		AC-205 & AC-			
			3	AC-405	68											½"	2¼"			½"		AC-206 & AC-207			
				AC-406	40											½"	2"			½"		AC-208 & AC-209			
			4,8	AC-407	36											½"	1¾"			½"		AC-312, AC-215			
			1,4	AC-408	32											⅞"	4"			⅞"		AC-216			
			2,3	AC-409	192	CARBON ST'L A-307 GR B GALV	¾"	6"	B1.1 UNC-2A	CARBON ST'L HVY HEX A-307 GR B GALV	¾"					¾"	3⅛"			¾"		6" & 5" BUTTERFLY VLV			
			2,3	AC-410	20		⅝"	5"	B1.1 UNC-2A		⅝"					⅝"	3¾"			⅝"		2½"			
			7	AC-411	44 STUDS 48 NUTS		⅞"	4½"			⅞"											FOR VLV AC-102			
			7	AC-412	80											¾"	3"			¾"		AC-223			

NO.	DATE		DESCRIPTION	MADE BY	APP'D
5	12-16-77		1-ITEM F-200 INCR. FR. 21 TO 22 F-205 22 24 F-300 20 22 F-305 22 24 F-400 160 180 F-403 76 100 B-221 23 24 B-307 27 30 B-404 226 240	P.G.	1-4-78 [illegible]
6	2-22-78		1. ADDED AC-222. 2. INCREASED QTY FOR: AC-202 (105-109), AC-204 (38-45), AC-209 (6-10), AC-212 (6-12), AC-311 (6-10)	[illegible]	2-28-78 [illegible]
7	5/10/78		1-INCR QTY OF AC-205 (18-20) AC-202 (109-113), AC-203 (54-55) (D.C.R. 2-17-78) & AC-212 (12-14) & B-209 (7-8) 2. INCR QTY AC-202 (113-120), AC-203 (55-60). 3-ADDED FTG. NOS. AC-223, AC-224, AC-225, AC-316, AC-317, AC-318, AC-412, AC-413 & AC-414 PER Y.I.S. NO 4650-22-125 & ADDED B-409 4-ADDED FTG. NO AC-411 PER Y.I.S. NO. 4650-22-124	PCG	5-17-78 [illegible]
8	8/31/78		1-INCREASED FLANGES NO. AC-204 FROM 45 TO 47 PER Y.I.S. 4650-22-215. INCREASED FLANGES NO. AC-215 FROM 8 TO 10. 2-INCREASED GASKETS NO. AC-312 FROM 8 TO 10 3-INCREASED BOLTS NO. AC-407 FROM 32 TO 36	F.J.D.	9-7-78 [illegible]
9	10-3-78		1-QUANT. OF ITEM B-201 CHANGED FROM 30 TO 31 PER Y.I.S. M-4650-22-283	P.G.	10-26-78 [illegible]

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4-7-77		1-CHG QTY PC.# AC-204 (6 TO 20) - AC-305 (2 TO 12) - B-301 (4 TO 5) + B-401 (48 TO 132). 2-ADDED PC.# AC-212, B-216, B-217, B-218, B-316 + B-317 3. CHG QTY OF F-207 (2 TO 5), F-208 (1 TO 2), F-307 (1 TO 6), F-308 (1 TO 2), F-404 (4 TO 20), B-208 (2 TO 3), B-307 (2 TO 3) & B-312 (2 TO 3).	RJL Secc	G.G.S. LTR. DATED 5-17-77
2	7-20-77		1-INCR. THE QTY OF ITEMS; B-201 (22-30), B-203 (4-6), B-204 (15-19), B-205 (2-3), B-207 (10-15), B-208 (3-4), B-209 (3-6), B-210 (3-11), B-302 (23-32), B-303 (11-19), B-304 (2-3), B-307 (3-20), B-309 (5-12), B-311 (20-24), B-312 (3-5), B-402 (344-456), B-403 (120-216), B-404 (176-178), B-405 (28-68), AC-200 (7-30), AC-201 (15-30), AC-202 (4-96), AC-203 (9-51), AC-205 (16-18), AC-300 (6-22), AC-301 (12-23), AC-302 (2-37), AC-303 (30-52), AC-304 (14-37), AC-306 (6-21), AC-400 (72-276), AC-401 (96-216), AC-402 (256-472), AC-403 (162-504), F-200 (2-16), F-204 (2-14), F-207 (5-11), F-300 (9-16), F-303 (6-7), F-304 (2-11), F-307 (6-12), F-400 (72-128) & F-404 (20-44) B-314 (2-6) 2-ADDED ITEM NOS. AC-214 TO AC-221, AC-314, AC-315, AC-408 TO AC-410, B-219 TO B-223, B-318, F-405 & F-406 3-CHANGED THE LENGTH OF: F-402 (3"-2½"), F-403 (2¼"-2") & F-404 (2"-1¾") 4-FOR ITEM NO. F403, UNDER SERVICE, DELETED F-206.	P.G.G.	G.G. SHARP LTR. DATED 10-13-77
3	9-29-77		1-CHANGED AC-409 & AC-410 FROM BOLTS & NUTS TO STUDS & NUTS 2-INCR. THE QTY OF: AC-214 (53-62), AC-202 (96-105), AC-203 (51-54), AC-204 (20-38), AC-206 (1-9), AC-208 (4-5), AC-220 (4-5), AC-302 (37-48), AC-304 (37-49), AC-306 (21-27), AC-308 (1-5), AC-402 (472-552), AC-403 (564-612), AC-405 (20-68), AC-409 (136-192), B-209 (6-7), B-210 (11-17) B-215 (10-12), B-220 (16-17), B-221 (16-23), B-307 (20-27) B-309 (12-19), B-311 (24-27), B-314 (2-4), B-315 (10-12), B402 (456-480), B404 (178-226), B-405 (65-88) & F-304 (11-12) B-302 (32-33) F-204 (14-15)	PCG	11/1/77 [illegible]
4	12-1-77		1-INCR THE QTY OF: F-200 (16-21), F203 (9-13), F206 (10-22), F300 (16-20), F302 (7-9), F303 (7-11), F305 (18-22), F-400 (128-160), AC 208 (5-7), AC 215 (2-8), AC-310 (6-9), AC 311 (4-6), AC-408 (24-32), B210 (17-18), B223 (4-5), B314 (4-6), B403 (216-224) 2-ADDED B224 TO B226 & B319 3-DELETED B213, B315 & B407 4-UNDER SERVICE FOR: AC-407 - ADDED AC-216 & AC-408 - CHG'D AC-216 TO READ AC-216	PCG	12/5/77 [illegible]

4651		
4650	27,340 DWT CONTAINERSHIP	8450
HULL	DESIGN	CHARGE

JOB NO. AS NOTED

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ∞ DATE 11-9-76
DRAWN WF APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. M 4650-372-02-6 ALT. NO. 9

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR SALT WATER PIPING IN MACHY. SPACE

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	2-1-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

UAO-50113-A

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

M-722

		DATE OF ISSUE
	ALTERATION	1 2 3 4 5 6 7 8 9
	ENGINEERING DISTRIBUTION	[illegible]
MAIL	OWNERS	[illegible]
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S. NAVY	
	U.S.C.G.	
	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
OFFICE	HULL DRAFT. - 21	
	MACH. DRAFT. - 22	
	ELEC. DRAFT. - 23	
	OUTFIT. DRAFT. - 25	
	ESTIMATING	
	J DOUGHERTY (CTD)	
MISC.	PRODUCTION (SCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	PHILLIPS - PLANNING	
	TOTAL ENG'R. DIST.	
	YARD DISTRIBUTION	
YARD	HD. OFFICE	
	J. SIMMONS	
	PIECE RATE - 11	
	TEST DEPARTMENT	
	[illegible]	
	[illegible] PLANNING	
STRUCTURAL	GROUND ASSEMBLY	
	35 DEPT	
	P. [illegible]	
	H. LEVY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL - 40	
	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP - 52	
	OUTFIT. #1 PIER	
	PIPE DRAFT. - 52	
	BOILER SHOP - 58	
	OUTSIDE MACH. - 60	
	R. MAPLE	
	ELECTRIC SHOP - 70	
	SHEET MET. SHOP - 74	
	COPPER SHOP - 51	
	PAINT SHOP - 78	
	WELDING	
OTHER	MOLD LOFT - 41	
	BRACKET SHOP	
	R. MILLER	
	TOTAL YARD DIST.	

SQ. FT.

M4650-372-02-6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-6

FRAME 2 OF 4

SERVICE	CODE NO.	SPECIAL NOTES FROM REF#1	CAT. OR DRWG NO.
			TUBE TURN PT NO 60
			60
			60
			150
			FLAGG FLOW #5070
			FLAGG #7169
		155	TUBE TURN PT #50
		175	60
			50
		155	150
		155	50
		NOTES 90-93,155	TUBE TURN PT #150

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT 13	UNIT 14	UNIT 182-12-7	181-6	REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	
9				3				2				4	4			504501	504501-B		2,4,5	F-200	22	8"	150#	85°	225#	150#	B16.5	90-10 CU NI	—	SLIP
												2								F-201	4	6"							—	
												3		4						F-202	10	4"					B16.24	BRONZE	B-62	FLAN
4								1				4	2	2			504501-D	504501-E	3,4	F-203	13	3"								
6				1				1						7			504501-B	504501-D	2,3	F-204	15	2½"								
2				2			2		2			12	2	2			504501-E		4,5	F-205	24	1½"								
														1						F-206	1	1¼"								
6													5				504501-A	504501-B	1,2	F-207	11	1"								
1													1						1	F-208	2	5"					B16.5	90-10 CUNI	—	SLIP
20	1			7	2											504501	504501-B		2	AC-200	30	10"	29#	85°	SERVICE	150#	B16.5	90-10 CU·NI	—	SLIP ON
21	3				6														2	AC-201	30	8"							—	
33	5	1		36	8			20	16								(J)	504501-D 504501-G	2,3,6,7	AC-202	120	5"							—	
23	6	1		10	4			6	8								(J)	504501-J&F	2,3,7	AC-203	60	4"					B16.24	BRONZE	B-62	FLAN
1			14	8	8			10	4								504501-A	504501-B 504501-E	1,3,6,8	AC-204	47	2½"								
					4				4								504501-B	504501-F	2,7	AC-205	20	2"								
1			4														504501-D		3	AC-206	9	1½"								
																				AC-207	4	1¼"								
2	1											4					504501-D	504501-E	3,4	AC-208	7	1"								
						4	2	2	2								504501-G		6	AC-209	10	¾"								
																				AC-210	2	[illegible]								
1																				AC-211	1	3½								
				8	2			4								504501-A	504501-G	504501-J	1,6,7	AC-212	14	3"								
																				AC-213										
2	2	15	11	16					16							504501-B		504501-D	2,3	AC-214	62	6"					B16.5	90-10 CU.NI.	—	
3					1		4										504501-E	504501-M	2,4,8	AC-215	10	½"					B16.24	BRONZE	B62	
1	1																		2	AC-216	2	12"					B16.5	90-10 CUNI	—	
1																			2	AC-217	1	10"						FGD STL. BLK	A-105	
1																			2	AC-218	1	8"								
1																			2	AC-219	1	6"								
2			1														504501-D		2,3	AC-220	5	6"								
					1														2	AC-221	1	4"	—							
2																504501-G			6	AC-222	2	5"								
	1															504501-H			7	AC-223	1	12"	29#	85°	SERVICE	150#	MIL-F-20042C TY-EF	90-10 CUNI		FLANG
	1																		7	AC-224	1	5"								
					1														7	AC-225	1	½"						BRONZE		

SERVICE	CODE NO.	REMARKS	CAT. OR DRWG NO.
			JOHNS-MANVILLE #109

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT 13	UNIT 14	UNIT 182-12-7	181-6	REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	
8				3				2				4	5			504524	504524-B	504524-D	2,4,5	F-300	22	8"	150#	85°	225#	150#	B16.21	CLOTH INSERTED SBR RUBBER	D2000 GR AA-505	GASK
												2								F-301	4	6"								
												5		4			504524-D		4	F-302	9	4"								
3												4	2	2			504524-B	504524-D	2,4	F-303	11	3"								
3				1				1						7					2,3	F-304	12	2½"								
2				2			2		2			12	2	2			504524-D		4,5	F-305	24	1½"								
														1						F-306	1	1¼"								
6													6				504524-A	504524-B	1,2	F-307	12	1"								
1													1						1	F-308	2	5"								
15	2			4	1											504524	504524-B		2	AC-300	22	10"	29#	85°	SERVICE	150#	B16.21	CLOTH INSERTED SBR RUBBER	D2000 GR AA-505	GASK
17	3				3														2	AC-301	23	8"								
5	2	13	12	8					8									504524-C	2,3	AC-302	48	6"								
15	5	1		16				5	8										2	AC-303	52	5"								
14	3	1		9	3			3	8									504524-C	2,3	AC-304	49	4"								
					2			2									504524-A		1	AC-305	12	3"								
1			6	6	6			6	2								504524-B	504524-C	2,3	AC-306	27	2½"								
					2				2											AC-307	16	2"								
3	2																504524-C		3	AC-308	5	1½"								
																				AC-309	4	1¼"								
4	1											4					504524-D		4	AC-310	9	1"								
						4	2	2	2									504524-E	4,6	AC-311	10	¾"								
3					1		6										504524-J		8	AC-312	10	½"								
1																				AC-313	1	3½"								
1	1															504524-B			2	AC-314	2	12"								
2																			2	AC-315	2	6"								
	1															504524-G			7	AC-316	1	12"								

DIA	ANSI DIM STD	SERVICE	CODE NO.	REMARKS
½"	B18.2.2	B-200		
⅞"	B1.1	B-216-217		
¾"	UNC-2B	B-201 & B-202		
¾"		B-203, B-204 & B-205		
⅝"		[illegible]		
⅝"		B-210, B-211 & B-223		
½"		B-212		
½"		B-213		
		AC-224		
		AC-225		

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF ST

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT 13	UNIT 14	UNIT 182-12-7	181-6	REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI
64				24				16				32	40			SUPPLY			2,4,5	F-400	180								150#
8												16	8							F-401	40								
12				4				4				56	8	20					2	F-402	108								
8				8				8	8			26	8	8					2,5	F-403	100								
20													20	4					1,2	F-404	44								
														32		504530-A			2	F-405	32								
														16					2	F-406	16								
192	24			48	12											SUPPLY			2	AC-400	276								29#
168	24				24														2	AC-401	216								
112	56	112	96					48	128										2,3	AC-402	552								
124	24	8	24	264	48			48	72										2,3	AC-403	612								
			16		8				16											AC-404	64								
8	4		16									8							3	AC-405	68								
12	4					8	4	4	4											AC-406	40								
					4		12												4,8	AC-407	36								
20	12															SUPPLY			2,4	AC-408	32								
	8			64				24	96							504529	W.E. Supply		2,3	AC-409	192	CARBON ST'L	¾"	6"	B1.1 UNC-2A	CARBON ST'L HVY HEX	¾"		
								12	8								W.E. Supply		2,3	AC-410	20	A307 GR-B GALV	⅝"	5"	B1.1 UNC-2A	A-307 GR-B GALV	⅝"		
24																UAO			7	AC-411	44 STUDS 48 NUTS		⅞"	4½"			⅞"		
	20															SUPPLY			7	AC-412	20								

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-6

FRAME 3 OF 4

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	JOB NO.	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
504501				B-200	10	12"	25#	—	34#	150#	B16.5	FRGD STL GALV	A105	SLIP ON FLAT FACE F&D		181		NOTES 155,90-93	TUBE TURN PT NO 50
	504501-B	504501-N	2,9	B-201	81	8"								FLAT					
				B-202	48	8"								RAISED					
	504501-B		2	B-203	6	6"								RAISED					
			2	B-204	19	6"								FLAT					
			2	B-205	3	5"													
				B-206	12	4"													
	504501-B		2	B-207	15	4"								RAISED					
	504501-A	504501-B	1,2	B-208	4	3"								FLAT					
	504501-B	504501-D	2,3,7	B-209	8	2½"													
		[illegible]	2,3,4	B-210	18	2"													
				B-211	2	2"								FLANGE RAISED FACE THREADED F&D				175 90-93	60
				B-212	2	1"								FLAT					60
	504501-D		3,4	B-213	12	½"								RAISED SOCKET WELD F&D	BORE SCH 40			90-93	150
				B-214	4	2½"					B16.24	BRONZE	B-62	SIL-BRZ F&D. (FACE FED)					FLAGG FLOW #5070
				B-215	1	2½"								THREADED F&D				175,90-93	FLAGG #4169
504501-A			1	B-216	4	10"					B16.5	FRGD STL GALV	A-105	SLIP ON FLAT FACE F&D				155	TUBE TURN PT.# 60
			1	B-217	12	10"								RAISED					
			1	B-218	6	2½"													
504501-B			2	B-219	2	7"OD x 2"								F.F.					
	504501-D		2,3	B-220	17	3"						FGD STL BLK		SCREWED F.F. F&D				175	60
		504501-E	2,3,5	B-221	24	3"								SLIPON F.F. F&D					50
			2	B-222	1	1½"						FGD STL GALV		SOCKET WELD F.F F&D	BORE FOR SCH 40			155	150
	504501-E		2,4	B-223	5	2"								SOCK. WELD RAISED FACE F&D				155	50
504501-E			4	B-224	1	2"		—							160	181		NOTES 90-93,155	TUBE TURN PT.# 150
* URO			4	B-225	2	5"		—			—	STL.-PLATE	ABS GR.A	SPECIAL SEE DETAIL "10-A" ON M4650-111-22					
* URO			4	B-226	2	5"		—			—			BLIND					

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT. NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	JOB NO.	CODE NO.	REMARKS	CAT. OR DRWG. NO.
504524				B-300	18	12"	25#	—	34	150#	B16.21	CLOTH INSERTED SBR RUBBER	D-2000 GR-AA-805	GASKET - FULL FACE - 1/8" THICK		181			JOHNS-MANVILLE #109
	504524-A		1	B-301	5	10"													
	504524-B		2,3	B-302	33	8"													
			2	B-303	19	6"													
			2	B-304	3	5"													
				B-305	10	4"													
				B-306	1	3½"													
IC	504524-A	504524-B	1,2,3,5	B-307	30	3"													
				B-308	10	2½"													
IC		504524-B	2,3	B-309	19	2"													
				B-310	4	1"													
		504524-B	2,3	B-311	27	8"								GASKET - RING TYPE - 1/8" THICK					
	504524-A		1,2	B-312	5	6"													
				B-313	5	4"													
	504524-B		2,3,4	B-314	6	2"													
	504526-C		3,4	B-315	12	½"													
504524-A			1	B-316	6	10"													
			1	B-317	3	2½"													
504524-B			2	B-318	1	1½"								- FULL FACE					
504524-D			4	B-319	2	—								- SEE DET. "10-A" ON M4650-111-22					
5045246			7	AC-317	1	5"	29#	85°	SERVICE	150#	B16.21	CLOTH INSERTED SBR RUBBER	D-2000 GR-AA-805	GASKET FULL FACE - 1/8" THK		372			JOHNS-MANVILLE #109
			7	AC-318	1	½"													

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS SEMI-FINISHED MATERIAL ASTM	NUTS SEMI-FINISHED DIA.	NUTS SEMI-FINISHED ANSI DIM. STD.	SERVICE	JOB NO.	CODE NO.	REMARKS
BOLTS SUPPLY	NUTS SUPPLY			B-400	216								25#	—	CARBON STL HEAVY HEX HEAD A-307 GR B GALV	7/8"	4"	B18.2.1 B1.1 UNC-2A	CARBON STL HEAVY HEX HEAD A-307 GR B GALV SEMI-FIN.	7/8"	B18.2.2 B1.1 UNC-2B	B-200	181		
			1	B-401	132											7/8"	3¾"			7/8"		B-216-217			
			2,3	B-402	480											¾"	3½"			¾"		B-201 & B-202			
			2,4	B-403	224											¾"	3¼"			¾"		B-203, B-204 & B-205			
			2,3,5	B-404	240											5/8"	3"			5/8"		B-206, B-207, B-208, B-209, B-214 B-215, B-220, B-221			
			2,3	B-405	88											5/8"	2¾"			5/8"		B-210, B-211 & B-223			
504530				B-406	16											½"	2"			½"		B-212			
SUPPLY			4	B-407	40											½"	1¾"			½"		B-213			
UAO			7	B-408	12	CARBON STL HVY HEX A307 GR B GALV	7/8"	4½"	B18.2.1 B1.1 UNC-2A	C.STL HVY HEX A307 GR B GALV	7/8"	B18.2.2 B1.1 UNC-2B			—	—	—	—	—	—	—				
SUPPLY	SUPPLY		7	AC413	12								29#	85°	CARBON STL HVY HEX HD A307 GR B GALV.	5/8"	2¼"	B18.2.1 B1.1 UNC-2A	CARB. STL HVY HEX HD A307 GR B GALV. SEMI-FIN.	5/8"	B18.2.2 B1.1 UNC-2B	AC-224			
			7	AC-414	5											½"	1¾"			½"		AC-225			

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. M4650-372-02-6

FRAME 4 OF 4

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT	UNIT 8	UNIT	UNIT 10	UNIT	UNIT	UNIT	UNIT 14	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT 182-12-1	181-6
1	1																							4
8	22												1											
13	22		2		5				3															
	2				2								2											
	15												4											
1	2																							
	3												3											
12	2																							
	1												3											
	2	2					1		1														2	
5	1	1	3				2						2										4	
					4																			
	6				2																			
					1																			
			2																					
		8	8				1																	
		9	10				3																	
1																								
	5																							
	1																							
							1																	
							1																	

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM STD.	MATERIAL	ASTM SPEC.	TYPE	
504501				B-200	10	12"	25#	—	34#	150#	B16.5	FRGD STL GALV	A105	SLIP ON FLAT FACE F&D	
	504501-B	504501-N	2,9	B-201	81	8"								FLAT	
				B-202	48	8"								RAISED	
	504501-B		2	B-203	6	6"								RAISED	
			2	B-204	19	6"								FLAT	
			2	B-205	3	5"									
				B-206	12	4"									
	504501-B		2	B-207	15	4"								RAISED	
	504501-A	504501-B	1,2	B-208	4	3"								FLAT	
	504501-B	504501-D	2,3,7	B-209	8	2 1/2"									
		504501-D 504501-E	2,3,4	B-210	18	2"									
				B-211	2	2"								FLANGE RAISED FACE THREADED F&D	
				B-212	2	1"								FLAT	
	504501-D		3,4	B-213	12	1/2"								RAISED SOCKET WELD F&D	BORE SCH 80
				B-214	4	2 1/2"					B16.24	BRONZE	B-62	SIL-BRZ F&D (FACE FED)	
				B-215	1	2 1/2"								THREADED F&D	
504501-A			1	B-216	4	10"					B16.5	FRGD STL GALV	A-105	SLIP ON FLAT FACE F&D	
			1	B-217	12	10"								RAISED	
			1	B-218	6	2 1/2"									
504501-B			2	B-219	2	100x12								F.F.	
	504501-D		2,3	B-220	17	3"						FGD STL BLK		SCREWED F.F. F&D	
		504501-E	2,3,5	B-221	24	3"								SLIPON F.F. F&D	BORE FF SCH 40
			2	B-222	1	1 1/2"						FGD STL GALV		SOCKET WELD F.F F&D	
	504501-E		2,4	B-223	5	2"								SOCK. WELD RAISED FACE F&D	160
504501-E			4	B-224	1	2"		—							
*UAO			4	B-225	2	5"		—			—	STL.-PLATE	ABS GR.A	SPECIAL SEE DETAIL "10-A" ON M4650-111-22	
*UAO			4	B-226	2	5"		—			—			BLIND	

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT	UNIT 8	UNIT	UNIT 10	UNIT	UNIT	UNIT	UNIT 14	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT 182-12-1	181-6
1	1																							8
					5																			
8	23												1											
	15												4											
1	2																							
	3												3											
	1	9	10				3						3											
	2	2	2				1																3	
5	1	1	3				2						2										5	
6	13				2				5															
	2				1								2											
2	2																							
	6																							
	8				1																			
1																								
							1																	

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE
504524				B-300	18	12"	25#	—	34	150#	B16.21	CLOTH INSERTED SBR RUBBER	D-2000 GR-AA-805	GASKET - FULL FACE - 1/8" THICK
	504524-A		1	B-301	5	10"								
	504524-B		2,3	B-302	33	8"								
			2	B-303	19	6"								
			2	B-304	3	5"								
				B-305	10	4"								
				B-306	1	3 1/2"								
1C	504524-A	504524-B	1,2,3,5	B-307	30	3"								
				B-308	10	2 1/2"								
1C		504524-B	2,3	B-309	19	2"								
				B-310	4	1"								
		504524-B	2,3	B-311	27	8"								GASKET - RING TYPE - 1/8" THICK
	504524-A		1,2	B-312	5	6"								
				B-313	5	4"								
	504524-B		2,3,4	B-314	6	2"								
	504524-C		3,4	B-315	12	1/2"								
504524-A			1	B-316	6	10"								
			1	B-317	3	2 1/2"								- FULL FACE
504524-B			2	B-318	1	1 1/2"								- SEE DET. "10-A" ON M4650-111-22
504524-D			4	B-319	2	—								
504524G			7	AC-317	1	5"	29#	85°	SERVICE	150#	B16.21	CLOTH INSERTED SBR RUBBER	D-2000 GR-AA-805	GASKET FULL FACE - 1/8" THK.
			7	AC-318	1	1/2"								

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT	UNIT 8	UNIT	UNIT 10	UNIT	UNIT	UNIT	UNIT 14	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT 182-12-1	181-6
12	12																							96
	36				72																			
120	288				16				40				8											
8	152				8		8						48											
16	42	40	56				16						36										12	
28	18	4	12				8						8										20	
							8																	
					12																			

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO.	BOLTING IDENT NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD	NUTS SEMI-FINISHED MATERIAL ASTM	NUTS SEMI-FINISHED DIA.	NUTS SEMI-FINISHED ANSI DIM STD
BOLTS SUPPLY	NUTS SUPPLY			B-400	216								25#	—	CARBON STL HEAVY HEX HEAD A-307 GR B GALV	7/8"	4"	B18.2.1 B1.1 UNC-2A	CARBON STL HEAVY HEX HEAD A-307 GR B GALV SEMI-FIN	7/8"	B18.2.2 B1.1 UNC-2B
			1	B-401	192											7/8"	3 3/4"			7/8"	
			2,3	B-402	480											3/4"	3 1/2"			3/4"	
			2,4	B-403	224											3/4"	3 1/4"			3/4"	
			2,3,5	B-404	240											5/8"	3"			5/8"	
			2,3	B-405	88											5/8"	2 3/4"			5/8"	
504550				B-406	16											1/2"	2"			1/2"	
SUPPLY			4	B-407	40											1/2"	1 3/4"			1/2"	
UAO			7	B-408	12	CARBON STL HVY HEX A307 GR B GALV	7/8"	4 1/2"	B18.2.1 B1.1 UNC-2A	C STL HVY HEX A307 GR B GALV	7/8"	B18.2.2 B1.1 UNC-2B									
SUPPLY	SUPPLY		7	AC413	12								29#	85°	CARBON STL HVY HEX HD A307 GR B GALV.	5/8"	2 1/4"	B18.2.1 B1.1 UNC-2A	CARB. STL HVY HEX HD A307 GR B GALV. SEMI-FIN.	5/8"	B18.2.2 B1.1 UNC-2B
			7	AC414	5											1/2"	1 5/8"			1/2"	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-7

FRAME 1 OF 5

LIST OF FITTINGS

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE		SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
			F-500	1	8"	150	85	150#	—	—	BRONZE	B-62	FLGD., FLD., SIMPLEX STRAINER W/NI-CU BASKET, 1/8 PERF., YOKE COVER, 4 TO 1 RATIO (MIN)	FIREMAIN	182	*68, *179, *90-93	TATE FIG *15-15F-150
		2,3,4,5	F-501	40	8"			200#	.148"	—	90-10 CU-NI	—	90° L.R. ELBOW BUTT WELD			*191, *90-93	COONEY PT *X80-90LRX
		3	F-502	3	6"				.134"	—		—					*X60-90LRX
			F-503	2	5"				.125"	—		—					*X50-90LRX
		2,3,6	F-504	19	4"				.109"	—		—					*X40-90LRX
		2,3	F-505	11	8"				.148"	—		—	45° ELBOW				*X80-45LRX
			F-506	1	4"				.109	—		—					*X40-45LRX
			F-507	2	8"x5"				.148	—		—	REDUCER - CONCENTRIC				*X80-CRX50
			F-508	1	6"x5"				.134	—		—					*X60-CRX50
			F-509	1	5"x4"				.125	—		—					*X50-CRX40
			F-510	1	4"x3"				.109	—		—					*X40-CRX30
			F-511	1	8"				.148"	—		—	TEE				*X80-STX80
			F-512	2	4"				.109"	—		—					*X40-STX40
			F-513	1	8"x8"x6"				.148	—		—	RED. TEE				*X80-RTX60
		3	F-514	2	6"x6"x4"				.134	—		—					*X60-RTX40
			F-515	1	12"x8"				.250	—		—	REDUCER CONCENTRIC				12X-CRX80
		3	F-516	1	8"			—	—	—	GALV. STL.	—	WIRE MESH BILGE SUCT. STRAINER SPLIT CLAMP TY				EF-498
			F-517	1	8"x8"x4"			200#	.148"x.109	—	90-10 CU-NI		RED. TEE BUTT WELD			*191, *90-93	COONEY PT *X80 RTX40
		3	F-518	5	8"x1/2"			150#	—	—	BRONZE	B-283	BRAZOLET-IPS RUN x F.P.T. OUTLET			*175, *90-93	BONNEY FORGE
		2	F-519	5	8"x3"				—	—			x SILBRAZE OUTLET			*181	
			F-520	1	8"x2 1/2"				—	—							
			F-521	4	8"x1 1/2"				—	—							
		2	F-522	4	8"x1"				—	—							
			F-523	2	8"x1/2"				—	—							
			F-524	1	6"x3"				—	—							
			F-525	1	5"x3"				—	—							
			F-526	1	4"x3"				—	—							
		2	F-527	2	4"x2 1/2"				—	—							
			F-528	2	4"x1/2"				—	—							
		2,3	F-529	12	3"			200#	—	—	CAST BRONZE	B-62	90° ELBOW SILBRAZE				FLAGG FIG *5001
		3	F-530	23	2 1/2"												
		3,4,5	F-531	39	1 1/2"												
		2	F-532	8	1"												
			F-533	1	3"								45°				*5004
		3	F-534	4	3"x2 1/2"x2 1/2"								RED TEE				*5021
			F-535	1	2 1/2"x2 1/2"x3"												
		3	F-536	8	2 1/2"x2 1/2"x1 1/2"												
			F-537	9	1 1/4"								UNION				*5201
			F-538	2	1"												
		2	F-539	3	1"			250#					Y STRAINER SILBRZ. W/NI-CU SCREEN, .062 PERF				MUELLER FIG *352 1/2
		2	F-540	2	1"			150#			NI-CU	B-127	ORIFICE PLATE 1/8 THK W/ 9/32 DIA HOLE				BS-2-UF TYPE "A"
		1	F-541	1	1"			200#	—	—	CAST BRONZE	B-62	45° ELBOW SILBRAZE			*181, *90-93	FLAGG FIG *5004
		1	F-542	1	1 1/2"				—	—							
		1	F-543	1	1/2"				—	—			COUPLING				*5050
		1,2,8	F-544	4	8"				.148	—	90-10 CU-NI	—	90° SR. ELBOW BUTT WELD			*191	COONEY PT *X80-90SRX
		1	F-545	1	8"x5"				.148	—		—	90° RED. L.R.				X80-90LRX (X50)
		1,2,3	F-546	118	8"	—	—	—	.187	—		—	WELDING SLEEVE				*X80-SLVX
		2,4	F-547	5	1 1/2"	150	85	200#	—	—	CAST BRONZE	B-62	TEE SILBRAZE			*181	FLAGG FIG. *5021
		2	F-548	1	1"	150	85	150#	—	—	90-10 CU-NI	B-402	ORIFICE PLATE 1/8 THK. W/ 9/32 DIA. HOLE				BS-2-UF TYPE "A"
		2,5	F-549	1	8x2 1/2	150	85	200#	—	—	90-10 CU-NI	—	ELBOLETS BUTT WELD	FIREMAIN		*191 & *90-93	BONNEY FORGE
		2,3,6	F-550	60	4"	—	—	—	.125	—	90-10 CU-NI	—	WELDING SLEEVE				COONEY PT *X40-SLVX
			AC-500	1	10"	30	88	150#	—	—	BRONZE	B-62	FLGD., FLD., SIMPLEX STRAINER W/NI-CU BASKET 3/16 PERF. BOLTED COVER - 4 TO 1 RATIO (MIN)	SALT WATER SERVICE	372	*68, *179, *90-93	TATE FIG *15-10F-150
			AC-501	1	8"				—	—			FLGD., FLD., DUPLEX STRAINER W/NI-CU BASKET 1/8 PERF. YOKE COVER, 4 TO 1 RATIO (MIN)			*179, *90-93	TATE FIG *1D-15F-150
			AC-502	1	6"				—	—						*179, *90-93	TATE FIG *1D-15F-150
			AC-503	1	4"				—	—			Y STRAINER FLGD. FLD. W/NI-CU SCREEN 3/4 PERF.			*190, *90-93	TATE FIG *1-Y
		5	AC-504	3	1"			250#	—	—			SILBRZ. .062 PERF			*181, *90-93	MUELLER FIG 352 1/2
			AC-505	3	1/2"				—	—							
			AC-506	1	2"			150#	—	—	NI-CU	B-127	ORIFICE PLATE 1/8 THK. W/ 1 5/8 DIA. HOLE	(T.G. L.O. COOLER)			BS-2-UF TYPE "A"
			AC-507	1	2 1/2"				—	—			1 7/8	AIR			
		2,7	AC-508	3	1/2"				—	—			1/8"	(FD. WTR., TEST ANALYZ'R)			
			AC-509	1	1/2"				—	—			3/8"	(FD. SAMPLE COOLER)			
			AC-510	2	3/4"				—	—			7/16"	(MN. FD. PUMP L.O. COOL'R)			
			~~AC-512~~	~~1~~	~~2"~~				—	—			~~1 7/8~~	~~(STANDBY DSL. GEN. AIR COOLER)~~			
			AC-513	2	1"				—	—			1/8"	(AIR PRE-HEATER)			
			AC-514	18	10"			200#	.187"	—	90-10 CU-NI	—	90° L.R. ELBOW BUTT WELD			*191, *90-93	COONEY PT *10X-90LRX
			AC-515	12	8"				.148"	—		—					*X80-90LRX
		2,7	AC-516	37	6"				.134"	—		—					*X60-90LRX
			AC-517	69	5"				.125"	—		—					*X50-90LRX
		2	AC-518	23	4"				.109	—		—					*X40-90LRX
		2,5	AC-593	8	10"				.187"	—		—	45° ELBOW				*10X-45LRX
		2,5	AC-594	21	5"				.125"	—		—					*X50-45LRX
		5	AC-595	6	4"				.109	—		—					*X40-45LRX
			AC-519	5	8"x5"				.148	—		—	REDUCER CONC.				*X80-CRX50
		2	AC-520	16	5"x4"				.125	—		—					*X50-CRX40
		2	AC-521	4	10"x8"				.187	—		—					*10X-CRX80
			AC-522	1	12"x8"				.250	—		—					*12X-CRX80
			AC-523	1	4"x2"				.109	—		—					*40X-CRX20
		2	AC-524	2	8"x1 1/2"			150#	—	—	BRONZE	B-283	BRAZOLET IPS RUN x SILBRAZE OUTLET			*181, *90-93	BONNEY FORGE
			AC-525	2	10"x1/2"				—	—							
		5	AC-526	3	5"x1"				—	—							
			AC-527	1	3"x1"				—	—							
		2	AC-528	2	2 1/2"x1/2"				—	—							
		2	AC-529	2	5"x2 1/2"				—	—							
		5	AC-530	4	1 1/2"x1/2"				—	—			F.P.T.			*175,	
		2	AC-531	3	8"x1/2"				—	—			SILBRAZE			*181	
		5	AC-532	3	10"x1"				—	—							
			AC-533	2	8"x1 1/4"				—	—							
		2	AC-534	3	6x2 1/2"				—	—							
		5	AC-535	2	10"x3"				—	—							
			AC-536	22	3"			200#	—	—	CAST BRONZE	B-62	90° ELBOW SILBRAZE				FLAGG FIG *5001
		7	AC-537	27	2 1/2"				—	—							
		5	AC-538	16	1 1/2"				—	—							
			AC-539	18	1 1/4"				—	—							
		2,3,4,5	AC-540	29	1"				—	—							
		3,5	AC-541	30	3/4"				—	—							
		5	AC-542	18	1/2"				—	—							
		7	AC-543	9	2"				—	—							
		5	AC-544	2	1 1/2"x1"				—	—			RED. ELL.				
			AC-545	4	3"				—	—			45° ELBOW				*5004
			AC-546	5	2"				—	—							
			AC-547	2	1 1/4"				—	—							
			AC-548	1	3/4"				—	—							
			AC-549	4	2"				—	—			TEE				*5021
		5	AC-550	4	1"				—	—							
			AC-551	8	3/4"				—	—							

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
2	8/26/77	2 THRU 14	B-559 INCREASED 13 TO 37 B-560 " 8 TO 20 F-501 INCREASED 20 TO 29 F-504 " 2 TO 9 F-505 " 2 TO 8 F-519 " 4 TO 5 F-522 " 2 TO 4 F-527 " 1 TO 2 F-529 " 9 TO 10 F-532 " 6 TO 8 F-539 " 2 TO 3 F-544 " 1 TO 3 F-546 " 7 TO 76 B-600 ADDED TO LIST B-601 " " " B-602 " " " F-547 ADDED TO LIST F-548 " " " F-549 " " " F-550 " " " 2-ADDED FITTING'S Nº AC-623 THRU AC-696 TO LIST. ADDED FITTING'S Nº B-561 THRU B-599 TO LIST. ADDED FITTING'S Nº F-551 THRU F-565 TO LIST. 3-DELETED AC-512 4- AC-534 INCREASED 1 TO 3. 5-REMOVED RESERVATION ON FITTING Nºs. AC-507 THRU AC-513., F-516, B-505, B-506 B-504 & B-507	F.J.D.	G.G. SHARP LTR DATED 11-22-77
3	11-23-77	2 THRU 14	1-INCR. THE QTY OF AC569 (7-17), AC573 (3-4), AC581 (6-4), AC600 (10-60), AC601 (90-96), AC619 (2-5), AC-665 (4-6), AC692 (1-6), B-513 (9-14), B557 (47-82), B558 (33-36), B559 (37-40), B560 (20-21), B604 (1-5), AC510 (2-3), AC626 (1-3), AC638 (12-16), AC-640 (12-18), AC641 (11-14), F501 (29-41), F502 (1-3), F504 (9-11), F514 (1-2), F529 (10-12), F530 (20-23), F531 (14-29), F534 (3-4), F536 (7-8), F546 (76-118), F550 (21-39), F553 (1-4), F555 (2-3), F556 (2-3), F558 (3-10), F560 (3-5), F562 (4-6), F563 (2-4), F-564 (7-8), & F605 (8-11), 2- ADDED FITTING NOS. AC-697 THRU AC-701, B606 THRU B612 & F-566 THRU F-574 3- REVISED THE FOLLOWING FTG. NOS. F-515 (SIZE WAS 8" x 1/4") F-554 (SIZE WAS 2" x 1/4") AC-515 (SIZE WAS 1/2) AC-530 (SIZE WAS 1 1/2" x 1/4") AC-568 (FLAGG FIG. NO. WAS 5201 & SCH. NO. WAS 200#) B-605 (DESCRIP. IN PART - WAS IPS RUN & OUTLET) B-574 (DESCRIP. IN PART - WAS BRONZE STRAINER PLATE) 4- DELETED B-503	F.G.	G.G. SHARP LTR DATED 2-22-78
4	12-13-77	7 1 14	1-ITEMS B-526, B-534, B-537, B-538, B-600, & B-601 CHANGED FROM M.I. SCRD. TO SOCK. WELD PER Y.I.S. 4650-22-51	P.G.	G.G. SHARP LTR. DATED 2-22-78
		10	2-ITEM B-564 CHANGED FROM M.I. TO FORGED STL. (SCRD. TO S.W.		
		14	3-ITEMS B-613 & B-614, AND REQ'N Nos. FOR SAME ADDED 4-ITEMS B-615 & AC-702 ADDED 5-ITEM F-501 INCR. FR. 41 TO 44 F-531 29 37 F-547 4 5 AC-540 18 22 AC-569 17 22 B-576 7 10 AC-687 2 3		
		14	6-ADDED ITEMS AC-703 & F-575		
		10	7-DELETED RESERVATION FOR ITEM B-573, & AC-597 FROM 2 TO 4.		
		1	8-ADDED REF. #2 AND GEN. NOTE #1 9-B560 INCR. FR. 21 TO 30 10-AC-700 SIZE CHANGED FR. 3/4"x1/2"x3/4" TO 1"x1"x3/4"		
5	2-1-78		1. REVISED THE QTY FOR: B-511 (16-18), F-501 (44-40), F-531 (37-31), F-557 (1-2), AC-530 (1-3), AC-516 (1-2), AC-540 (10-21), AC-541 (4-30), AC-542 (6-18), AC-544 (1-2), AC-558 (3-4), AC-555 (2-0), AC-574 (1-2), AC-585 (11-21), AC-593 (7-8), AC-594 (20-21), AC-595 (1-6), AC-598 (77-72), AC-599 (27-17), AC-600 (60-63), AC-601 (96-99), AC-602 (66-74), AC-689 (1-5). INDICATED QTYS FOR MOD#1 PER DER DTD 10-23-77 FOR: AC-593, 594, 595, 598, 599 & 600. AC-504 (2-3) 2. REVISED SIZES FOR AC-554 (1 1/4" x 3/4" x 3/4" TO 1 1/2" x 1/2" x 1/2") & AC-555 (1 1/4" x 1 1/4" x 1" TO 1" x 1" x 1") 3. ADDED AC 704 THRU AC 711, B616 & B617. 4. DELETED F-549.	RBM	2-28-78 AJA

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	1/31/77 4677		1-ADDED B-548	D.J.R.	G.G. SHARP LTR DATED 5-17-77
			2-ADDED RES. TO FITT'G # AC-506. 3-ADDED FITT'GS - AC-597 THRU AC-680 & B-549 THRU B-555. 4-CHG QTY OF AC-571 (1 TO 10).	RJL	
			5. ADDED FITTINGS F-541 THRU F-546; AC-621, AC-622 & B-556 THRU B-560. 6. CHG QTY OF AC-569 (1 TO 3), B-517 (4 TO 5), B-518 (2 TO 4) & B-546 (2 TO 3). 7. FITTING B-500 MATERIAL REVISED FROM NODULAR IRON TO BRONZE / NOTES TO SUIT	Secc J.J.P.	
2	8/26/77	2 THRU 14	1-INCREASED AMOUNT OF FITTINGS AS FOLLOWS - AC-516 INCREASED 8 TO 36 AC-518 " 15 TO 23 AC-520 " 6 TO 16 AC-521 " 3 TO 4 AC-524 " 1 TO 2 AC-528 " 1 TO 2 AC-529 " 1 TO 2 AC-531 " 1 TO 3 AC-540 " 8 TO 12 AC-565 " 1 TO 2 AC-568 " 2 TO 4 AC-569 " 3 TO 7 AC-573 " 1 TO 3 AC-576 " 10 TO 14 AC-585 " 11 TO 21 AC-586 " 2 TO 5 AC-587 " 1 TO 3 AC-593 " 5 TO 7 AC-594 " 9 TO 20 AC-598 " 20 TO 72 AC-599 " 15 TO 27 AC-600 " 5 TO 10 AC-601 " 40 TO 90 AC-602 " 10 TO 66 AC-604 " 4 TO 6 AC-608 " 1 TO 10 AC-609 " 1 TO 2 AC-610 " 1 TO 5 AC-611 " 1 TO 7 B-501 INCREASED 5 TO 6 B-502 " 5 TO 7 B-503 " 5 TO 6 B-509 " 2 TO 9 B-510 " 14 TO 36 B-511 " 14 TO 16 B-512 " 18 TO 20 B-513 " 7 TO 12 B-514 " 1 TO 5 B-516 " 6 TO 15 B-517 " 5 TO 6 B-523 " 2 TO 3 B-526 " 28 TO 38 B-527 " 1 TO 15 B-536 " 5 TO 6 B-538 " 20 TO 41 B-539 " 3 TO 6 B-540 " 5 TO 10 B-543 " 1 TO 2 B-544 " 2 TO 4 B-549 " 2 TO 9 B-551 " 2 TO 3 B-553 " 10 FT. TO 15 FT. B-556 " 3 TO 5 B-557 " 8 TO 47 B-558 " 30 TO 33 ALT. 2 CONT. ABOVE	F.J.D.	

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
6	5/10/78		1-INCR. QTY OF B558 (36-37), B555 (40-41), AC601 (100-102), AC-599 (33-49), AC602 (74-78), AC-605 (10-12), AC606 (12-13), AC620 (3-4) PER DCR DATED 2-17-78 2. ADDED FTG. NOS. PER YIS. NOS. F-576, F-577, AC-712 & AC-713 } 4650-22-133 B-616 - 4650-22-126 3- ADDED OPT. DET. MK. NO. FOR FTG. # B-573 & ADDED AC-714 4- INCR. QTY. OF AC-600 (63-72), AC-601 (102-117), AC-602 (76-87), B557 (82-88), F-553 (4-5), F-504 (11-19) F-550 (39-60) B-538 (41-49), B544 (4-5) AC-710 (1-3), AC 711 (2-3) AC702 (14-17) 6- CHG'D SIZE OF AC-675 (WAS 5" x 1/4")	P.G.	5-17-78 AJA
7	8/31/78		1-INCREASED FITT. Nº AC-508 FROM 2 TO 3 INCREASED FITT. Nº AC-516 FROM 36 TO 37 INCREASED FITT. Nº AC-537 FROM 26 TO 27 REQ'D., PER Y.I.S. 4650-22-215. INCREASED FITT. Nº AC-543 FROM 8 TO 9 REQ'D., PER Y.I.S. 4650-22-215. INCREASED FITT. Nº AC-598 FROM 76 TO 78 REQ'D., PER Y.I.S. 4650-22-200 INCREASED FITT. Nº B-549 FROM 9 TO 10 REQ'D., PER Y.I.S. 4650-22-140. 2-ADDED FITT. Nº AC-715 TO LIST.	F.J.D.	9-7-78 AJA
8	10-4-78	7,10	1-ITEM AC-679 INCR. FROM 4 TO 5, AND ITEM B-510 INCR. FROM 36 TO 40 PER Y.I.S. M-4650-22-283	P.G.	2-2-79 AJA
		3,7	2-ITEM B-544 INCR. FROM 5 TO 6, AND ITEM F-544 INCR. FROM 3 TO 4		
	1-31-79		3. REINSTATED "GALV." IN DESCRIPTION OF ITEMS B-527 THRU B-541 ("GALV" WAS INADVERTENTLY DELETED WITHOUT MENTION ON ALT. 4)	EJK	

GENERAL NOTES

1- BREAKDOWN FOR QUANTITIES AND SIZES OF PLATES (B-573) TO BE AS FOLLOWS:
MOD# 1 : (15) 5"x5"
MOD# 2 : (15) 5"x5"
MOD# 3 : (1) 12"x5", (1) 12"x8", AND (15) 5"x5"
MOD# 4 :
MOD# 5,6,7 AND 8 (4) 5"x5"
UAO-50113

NO.	PLAN NO.	TITLE
2	M-4650-111-18	ARRGMT. OF PIPING - LOWER LEVEL - PORTSIDE - AFT
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L.

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		
4650	27,340 D.W.T. CONTAINER SHIP	8450

JOB NO. AS NOTED

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 11-13-76
DRAWN D. BEGGARLY
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-372-02-7
ALT. NO. 8

FITTING LIST FOR SALT WATER PIPING IN MACHY SPACE

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-17-77				
A.B.S.	9-15-77				
U.S.C.G.	5-9-77				
LLOYD'S R.S.					
U.S.P.H.S.					

M-723

DATE OF ISSUE

ALTERATION	[illegible]
ENGINEERING DISTRIBUTION	[illegible]
MAIL: OWNERS	[illegible]
AMERICAN BUREAU	[illegible]
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	[illegible]
JOINER CONT'R.	
INSPECTION: OWNER'S INSP.	[illegible]
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	[illegible]
U.S. NAVY INSP.	
U.S.C.G. INSP.	
OFFICE: HULL DRAFT. - 21	[illegible]
MACH. DRAFT - 22	[illegible]
ELEC DRAFT - 23	[illegible]
OUTFIT DRAFT - 25	[illegible]
ESTIMATING	
J. DOUGHERTY (CTD)	[illegible]
MISC.: PRODUCTION (BCD)	
ORDER DEPT.	
JOINER CONT. YARD	
WILLIAMS PLANNING	[illegible]
TOTAL ENG'R. DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
YARD: HULL OFFICE	[illegible]
SHIP SUPT	[illegible]
PIECE RATE - 11	[illegible]
TEST DEPARTMENT	[illegible]
BROKUS	[illegible]
PLANNING	[illegible]
STRUCTURAL: GROUND ASSEMBLY	[illegible]
SUPT.	[illegible]
HANK PISCHER	[illegible]
R. MILLER	[illegible]
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	[illegible]
OPTICAL DETAIL - 45	[illegible]
WET DOCK	
MACH'Y & OUTFIT: PIPE SHOP - 52	[illegible]
OUTFIT. #1 PIER	[illegible]
PIPE DRAFT - 52	[illegible]
BOILER SHOP - 58	[illegible]
OUTSIDE MACH. - 60	[illegible]
D. MARKS	[illegible]
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 51	[illegible]
PAINT SHOP - 75	[illegible]
WELDING	
OTHER: MOLD LOFT - 41	[illegible]
BRACKET SHOP	
TOTAL YARD DIST.	[illegible]

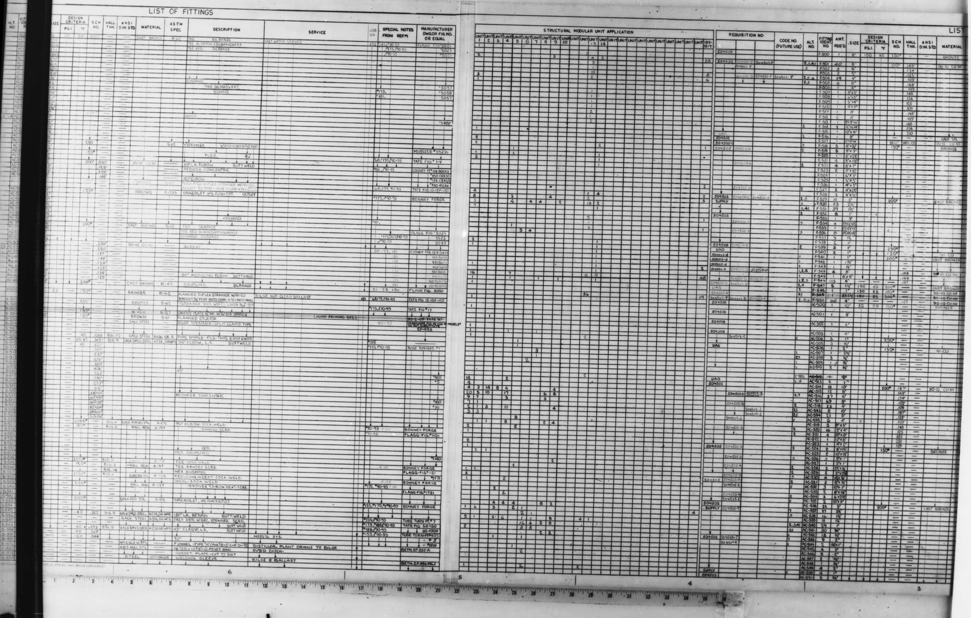
38.75 SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-7

FRAME 2 OF 5



LIST OF FITTINGS

DESIGN CRITERIA P.S.I.	°F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	JOB Nº	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
30	88°	200#	—	—	CAST BRONZE	B-62	TEE SILBRAZE	SALT WATER SERVICE	372	181, *90-93	FLAGG FIG #5021
			—	—			TEE SILBRAZE x SILBRAZE x F.P.T.			*175, *90-93	*5023
			—	—			TEE RED. SILBRAZE			*90-93	*5021
			—	—			BUSHING				
			—	—			MALE SILBRAZE x F.P.T.			*175,	*5057
			—	—			SILBRAZE			*181,	*5058
			—	—							5057
		300#	—	—			UNION				*5425
		250	—	—		B-62	Y STRAINER W/NI-CU SCREEN .062 PERF.				MUELLER #352½
		150#	—	—			FLGD. ¾"				
		200#	.250"	—	90-10 CU-NI	—	90° L.R. ELBOW BUTT WELD			*68, *190, *90-93	TATE FIG # 1-Y
			.125"	—		—	REDUCER-CONCENTRIC			*181, *90-93	COONEY PT # 12X-90LRX
			.250"	—		—					*X50 CRX30
			.148"	—		—	45° ELBOW				*12X-CRX60
				—							*X80-45LRX
		150#	—	—	BRONZE	B-62	FLGD. F&D. DUPLEX STRAINER W/NI-CU BASKET 3/16" PERF. - YOKE COVER 4 TO 1 RATIO (MIN.)			68, 179, 90-93	TATE FIG. 10-15F-150
		150#	—	—	BRONZE	B-283	BRAZOLET IPS RUN x F.P.T. OUTLET			*175, *90-93	BONNEY FORGE
			—	—			x SILBRAZE			*181,	
		200#	—	—	CAST BRONZE	B-62	TEE SILBRAZE				FLAGG FIG #5021
			—	—			TEE RED. SILBRAZE x FPT x SILBRAZE			*175, 157, *90-93	5022
			—	—			BUSHING SILBRAZE			*90-93	5057
		—	.250"	—	90-10 CU-NI	—	SLEEVE			90-93, 191	COONEY FIG. 12X-SLVXX
		—	.250"	—		—				191	10X-SLVXX
		—	.187"	—		—				191	X80-SLVXX
		—	.148"	—		—				191	X60-SLVXX
		—	.134"	—		—				191	X50-SLVXX
		—	.125"	—		—				191	X40-SLVXX
		—	.134"	—		—	90° REDUCING ELBOW BUTTWELD			191	X60-90LRX
		—	.125"	—		—				191	X50-90LRX
		200#	—	—	CAST BRONZE	B-62	COUPLING SILBRAZE			90-93, 181	FLAGG FIG. 5050
25	—	150#	—	—	BRONZE	B-62	FLANGED DUPLEX STRAINER W/NI-CU BASKET 3/16" PERF.-BOLTED COVER; 4 TO 1 RATIO (MIN.)	BILGE AND CLEAN BALLAST	181	*68, 179, *90-93	TATE FIG 10-10F-150
	—	250#	—	—	BRONZE	B-62	Y STRAINER SCRD. W/NI-CU SCREEN 3/64" PERF.			*175, *90-93	TATE FIG #1Y
	—	150#	—	—	NI-CU	B-127	ORIFICE PLATE ⅛" THK. W/ ¾" DIA. ORIFICE	(PUMP PRIMING SYS.)			85-2-UF TYPE "A"
	—	150#	—	—	BRONZE	B-61	FLANGED EDUCTOR			90-93	DERBYSHIRE FIG NO 350 DO NOT SUBSTITUTE ← MODEL 2"
	—	—	—	—	GALV. STEEL	—	BILGE STRAINER-SPLIT CLAMP TYPE				EF-498
	—	40	.088	B36.10	GALV. STEEL	A106 GR. B	PIPE NIPPLE - 4" LG. - THRD. BOTH ENDS			*135	
	—	STD. WT.	.365"	B16.9	GALV. SMLS. STEEL	A234, GR. WPB	90° ELBOW, L.R. BUTTWELD			*155, *90-93	TUBE TURNPT. #1
	—	40	.322"								
	—		.280"								
	—		.237"								
	—		.216"								
	—		.205"								
	—		.406"				45°				*405
	—		.322"								*5
	—		.280"								
	—		.237"								
	—		.216"								
	—		.375"x.322"				REDUCER CONCENTRIC				
	—		.365"x.280"								
	—		.365"x.322"								*490
	—		.322"x.280"								*90
	—		.280"x.237"								
	—		.216"x.154								
	—	3000#	—	B16.11	GALV. FORGED STL.	A-105	90° ELBOW-SOCK. WELD			*90-93	BONNEY FORGE
	—	150#	—	B16.3	MALL IRON	A-197	-BANDED SCRD.			*90-93	FLAGG-FIG. #1101
	—		—				RED.				
	—		—				RED. COUPLING				*1140
	—	3000#	—	B16.11	FORGED STL.	A-105	TEE-SOCK. WELD				BONNEY FORGE
	—	150#	—	B16.3	MALL IRON	A-197	TEE-BANDED SCRD.				FLAGG-FIG. #1121
	—		—	B16.14			HEX. BUSHING				*2171
	—	3000#	—	B16.11	FORGED STL.	A-105	REDUCING INSERT-SOCK. WELD				BONNEY FORGE
	—		—	—			UNION-SOCK. WELD			*175, *90-93	
	—	300#	—	—	MALL IRON	A-197	-BRONZE TO IRON SEAT-SCRD.				FLAGG-FIG. #1731
	—	3000#	—	—	GALV. FGD. STL.	A-105	THREADOLET, IPS RUN & OUTLET			*155, *170, *90-93	BONNEY FORGE
	—	40	.322	B16.9	GALV. SMLS. STEEL	A234, GR. WPB	180° L.R. RETURN BUTT. WELD			*155, *90-93	TUBE TURN PT. #7
	—	—	—	—	GALV. STEEL	A-216, GR. WCB	DECK DRN. W/BRZ. STRAINER SCRD.			*175, *188, *90-93	TATE FIG 60-160
	—	40	.375	B16.9	GALV. SMLS. STEEL	A-234 GR. WPB	BUTT WELD			*188, *90-93	60-100H
—	—	40	.365				45° ELBOW, L.R. BUTT WELD			*155, *90-93	TUBE TURN PT #405
—	—	120	.844				90°	HEEL'G. SYS.			- #5
—	—	—	—	—	NR 12 USS GA. ST'L	—	FUNNEL - TYPE "A" (A=6", B=3", C=4", D=1½")	DISTILLER PLANT DRAINS TO BILGE			- #1201
—	—	—	—	—	ABS HULL ST'L	—	16" O.D. x 10⅞" I.D. PENET. RING	OV'B'D DISCH-			BETH. EF-355-A
—	—	—	—	—		—	GUSSET PLATE - CUT TO SUIT				
—	—	—	—	—	STEEL	A519-GR1015	WELDING SLEEVE	BILGE & BALLAST			BETH. EF-496-FIG. 1

…HESE ITEMS HAS BEEN ORDERED.

6

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1 · UNIT 2 · UNIT 3 · UNIT 4 · UNIT 5 · UNIT 6 · UNIT 7 · UNIT 8 · UNIT 9 · UNIT 10 · UNIT · UNIT · UNIT 13 · UNIT 14 · UNIT · UNIT · UNIT · UNIT · UNIT · UNIT · UNIT · UNIT · UNIT · 182-12-7

5

LIST

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	°F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL
504508					F-500	1	8"	150	85	150#	—	—	BRONZE
504502	504502-D	504502-F		2,3,4,5	F-501	40	8"			200#	.148"	—	90-10 CU-NI
	504502 F			3	F-502	3	6"				.134"	—	
					F-503	2	5"				.125"	—	
	504502-D	504502-F	504502-P	2,3,6	F-504	19	4"				.109"	—	
				2,3	F-505	11	8"				.148"	—	
					F-506	1	4"				.109	—	
					F-507	2	8"x5"				.148	—	
					F-508	1	6"x5"				.134	—	
					F-509	1	5"x4"				.125	—	
					F-510	1	4"x3"				.109	—	
					F-511	1	8"				.148"	—	
					F-512	2	4"				.109"	—	
					F-513	1	8"x8"x6"				.148	—	
				3	F-514	2	6"x6"x4"				.134	—	
					F-515	1	12"x8"				.250	—	
UAO 504502				2	F-516	1	8"				—	—	
504505-2					F-517	1	8"x8"x4"			—	—	—	GALV. STL.
504505	504505-A			3	F-518	5	8"x½"			200#	.148x.109	—	90-10 CU-NI
				2	F-519	5	8"x3"			150#	—	—	BRONZE
					F-520	1	8"x2½"				—	—	
					F-521	4	8"x1½"				—	—	
	504505-A			2	F-522	4	8"x1"				—	—	
					F-523	2	8"x½"				—	—	
					F-524	1	6"x3"				—	—	
					F-525	1	5"x3"				—	—	
					F-526	1	4"x3"				—	—	
	504505-A			2	F-527	2	4"x2½"				—	—	
					F-528	2	4"x½"				—	—	
504503 SUPPLY	504503-D	504503-G		2,3	F-529	12	3"			200#	—	—	CAST BRONZE
				3	F-530	23	2½"				—	—	
				3,4,5	F-531	39	1½"				—	—	
504503				2	F-532	8	1"				—	—	
					F-533	1	3"				—	—	
	504503-B			3	F-534	4	3"x2½"x2½"				—	—	
					F-535	1	2½"x2½"x3"				—	—	
	504503-B			3	F-536	8	2½"x1½"x1½"				—	—	
					F-537	9	1½				—	—	
					F-538	2	1"				—	—	
504508	504508-B			2	F-539	3	1"			250#	—	—	
UAO					F-540	2	1"			150#	—	—	NI-CU
504503-B				1	F-541	1	1"			200#	—	—	CAST BRONZE
504503-B				1	F-542	1	1½"				—	—	
504603-B				1	F-543	1	½"				—	—	
504502-B	504502-D	504502-U		1,2,8	F-544	4	8"				.148	—	90-10 CU-NI
	504502-D	504502-F		1	F-545	1	8"x5"				.148	—	
504503-C	504503-H			1,2,3	F-546	113	8"	—	—	—	.187	—	
UAO				2,4	F-547	5	1½"	150	85	200#	—	—	CAST BRONZE
504505-A				2	F-548	1	1"	150	85	150#	—	—	90-10 CU-NI
504502-P	504502-D	504502-F		25	F-549	1	8"x2½"	150	85	200#	—	—	90-10 CU-NI
504508				2,3,6	F-550	60	4"	—	—	—	.125	—	90-10 CU-NI
					AC-500	1	10"	30	88	150#	—	—	BRONZE
504508					AC-501	1	8"				—	—	
504508					AC-502	1	6"				—	—	
					AC-503	1	4"				—	—	
	504508-C			5	AC-504	3	1"			250#	—	—	
UAO					AC-505	3	½"				—	—	
					AC-506	1	2"				—	—	
				2	AC-507	1	2½"			150#	—	—	NI-CU
				2,7	AC-508	3	½"				—	—	
				2	AC-509	1	¾"				—	—	
				2	AC-510	2	¾"				—	—	
				2 ~~[illegible]~~	~~AC-512~~	~~1~~	~~2"~~				—	—	
UAO				2,3	AC-513	2	1"				—	—	
504502					AC-514	18	10"			200#	.187"	—	90-10 CU-NI
					AC-515	12	8"				.148"	—	
	504502-D	504502-S 504502-T		2,7	AC-516	37	6"				.134"	—	
					AC-517	69	5"				.125"	—	
	504502-D			2	AC-518	23	4"				.109	—	
		504502-J		25	AC-593	8	10"				.187"	—	
		504502-J		25	AC-594	21	5"				.125"	—	
	504502-J			5	AC-595	6	4"				.109"	—	
					AC-519	5	8"x5"				.148	—	
	504502-D			2	AC-520	16	5"x4"				.125	—	
				2	AC-521	4	10"x8"				.187	—	
					AC-522	1	12"x8"				.250	—	
					AC-523	1	4"x2"				.109	—	
504505	504505-A			2	AC-524	2	8"x1½"			150#	—	—	BRONZE
					AC-525	2	10"x½"				—	—	
	504505-D			5	AC-526	3	5"x1"				—	—	
					AC-527	1	3"x1"				—	—	
	504505-A			2	AC-528	2	2½"x½"				—	—	
				2	AC-529	2	5"x2½"				—	—	
	504505-D			3	AC-530	4	1½"x½"				—	—	
504506	504505-A			2	AC-531	3	8"x½"				—	—	
	504505-E			5	AC-532	3	10"x1"				—	—	
					AC-533	2	8"x1¼"				—	—	
	504505-A			2	AC-534	3	6x2½"				—	—	
	504505-E			5	AC-535	2	10"x3"				—	—	
504503 SUPPLY	504503-T				AC-536	22	3"			200#	—	—	CAST BRONZE
				7	AC-537	27	2½"				—	—	
				3	AC-538	16	1½"				—	—	
					AC-539	18	1¼"				—	—	
				2,3,4,5	AC-540	29	1"				—	—	
				3,5	AC-541	30	¾"				—	—	
504503	504503-T			5	AC-542	18	½"				—	—	
	504503-R			7	AC-543	9	2"				—	—	
				5	AC-544	2	1½"x1"				—	—	
					AC-545	4	3"				—	—	
					AC-546	5	2"				—	—	
					AC-547	2	1¼"				—	—	
					AC-548	1	¾"				—	—	
					AC-549	4	2"				—	—	
				5	AC-550	4	1"				—	—	
SUPPLY 504503					AC-551	8	¾"				—	—	

4

3

AUTOMATION INDUSTRIES INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-7

FRAME 3 OF 5

TINGS

DESCRIPTION	SERVICE	JOB Nº	SPECIAL NOTES FROM REF# 1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
ONCENTRIC REDUCER - BUTTWELD	SEA WATER COOLING	372	90-93, 191	COONEY-PT. X80-CRX40
				PT. X50-CRX25
				PT. X40-CRX25
TRAIGHT TEE				PT. X80-STX80
EDUCING				PT. X50-STX50
				PT. 10X-RTX80
				PT. 10X-RTX50
				PT. X80-RTX50
DECK SLEEVE			90-93	BETH. EF-496-FIG-3A
REDUCING TEE SILBRAZE			90-93, 181	FLAGG. FIG. 5021
BUSHING				5057
ADAPTER - FEM. THR'D. x M. SIL-BRZ				5063
LBOW 90° SILBRAZE			175	5001
PPLE, DET "6-A; W/CAP & CHAIN, DET 6-C				BETH. EF-345
CK SLEEVE			90-93	BETH. EF-496-FIG. 2
NCENTRIC REDUCER - BUTT WELD	SEA WATER COOLING	372	90-93, 191	COONEY-PT. X60-CRX50
DUCING COUPLING SILBRAZE	SEA WATER COOLING	372	90-93, 181	FLAGG. FIG. 5050
APTER - MALE THRD. x SILBRAZE				FIG. 5060
- MALE THR'D. x SILBRAZE				5060
XPANSION JT. FLGD. (6" FACE TO FACE)			189, 90-93	MERCER STYLE NO. [illegible]
RAZOLET RUN & OUTLET I.P.S. FPT			90-93, 175	BONNEY FORGE
			90-93, 175	
UG - SCR'D			90-93	FLAGG. FIG. 4173
DUCING TEE - BUTT WELD			90-93, 191	COONEY-PT. X40-RTX25
				PT. X40-RTX20
CENTRIC REDUCER				PT. X40-CRX20
5° ELBOW				PT. 12X-45LRX
				PT. X60-45LRX
RAIGHT TEE				PT. X40-STX40
NCENTRIC REDUCER				PT. X40-CRX15
CK SLEEVE				BETH. EF-496 FIG. 3A
RAIGHT TEE - BUTT WELD	SEA WATER COOLING	372	191, 90-93	COONEY-PT.# 10XST10X
DUCING 90° ELBOW				# 10X-90LRX (MOD.)
ELBOW SHORT RAD.				PT. 10X-90SRX
AZOLET RUN & OUTLET; I.P.S. SIL BRZ			181,	BONNEY FORGE
OWOLET F.P.T. OUTLET (FOR 8" ELBOW)			175	
ELBOW REDUCING - BUTT WELD			191,	COONEY-PT.# X80-90LR (MOD)
ELBOW SHORT RAD.				PT.# X80-90SRX
ELBOW			155	TUBE TURN PT.# 1205
DUCING TEE			191	COONEY-PT.# X80-RTX60
AZOLET RUN & OUTLET, I.P.S. SIL BRZ			181	BONNEY FORGE
° ELBOW BUTT WELD			155	TUBE TURN PT.# 1205
CENTRIC REDUCER -			191,	COONEY PT.# 10X-CRX50
LDOLET RUN & OUTLET; I.P.S.				BONNEY FORGE
ELBOW SHORT RAD.				COONEY PT.# X50-90SRX
ELBOW, REDUCING SIL BRZ			181	FLAGG FIG 5001
DOLET RUN & OUTLET I.P.S. BUTT WELD		372	90-93	BONNEY FORGE
UCING TEE SILBRZ			181, 90-93	FLAGG FIG 5021
PLING SILB. RED.				5050
TER MPT x SILB.				5062
CENTRIC REDUCER BUTT WELD	SEA WATER COOLING		191, 90-93	COONEY PT.# X60-CRX40
ETRATION SLEEVE	BILGE & BALLAST	181		BETH EF-496 FIG 2
LDING SLEEVE				BETH. EF-496 FIG. 1
E STRAINER - SPLIT CLAMP TYPE	BILGE & BALLAST	181		BETH. EF-498
NEL-TYPE "A" (A=10", B=3", C=5", D=1/2")				BETH. EF-355-A
EDOLET RUN & OUTLET I.P.S.			170, 90-93	BONNEY FORGE
ELBOW, S.W.			155, 90-93	BONNEY FORGE
G COUNTERSUNK HEAD			90-93	FLAGG FIG. 2175
UCING 90° ELBOW BUTT WELD			155, 90-93	TUBE-TURN PT.# 1-R
ELBOW LONG RAD.				PT.# 1
NEL-TYPE "A" (A=6", B=3", C=4", D=3/4")				BETH EF-355-A
(A=9", B=3", C=6", D=1")				
TYPE #16				
UCING 90° ELBOW BUTT WELD	BILGE & BALLAST	181	155, 90-93	TUBE-TURN PT.# 1-R
4" STL. PT.: SEE GEN. NOTE 7 FOR [illegible]	BILGE DISCH. DOUBLER PLATE		SECT. "14-C" ON REF.# 2	FOR TYP. INSTALL.
K DRAIN W/ BRASS STRAINER PL.		181		BETH. STD. EF476
ELBOW LONG RAD. BUTT WELD	BOILER WASH DOWN DRAINS		155, 90-93	TUBE-TURN PT.# 1
ELBOW				PT.# 5
ICE PT. 1/8" THK. (1 1/4" DIA. HOLE)				BETH. STD. BS-2-UF TYPE "A"
CENTRIC REDUCER BUTT-WELD			155, 90-93	TUBE TURN PT.# 90
ORIFICE ASS'Y - 1 1/4" DIA. HOLE, SCRD.			90-93	CLAYTON-MARK FIG. 6197
ENTRIC REDUCER BUTT WELD			155, 90-93	TUBE TURN PT.# 94
ELBOW				TUBE TURN PT.# 1205
				TUBE TURN PT.# 1205
HOSE ADAPTER-MOD. W/CAP & CHAIN DET 6-[illegible]	(DET. "6-B", FIG. #2 - (FLG TO BE FLAT FACED)		NIPPLE: DET "6-A", [illegible]	BETH. STD EF-345
OLET I.P.S. RUN x F.P.T. OUTLET		372	181, 90-93	BONNEY FORGE
3# PLATE		372	DET. "13-A", M4650-311-18	
REDUCING SILBRZ	SEA WATER COOLING	372	181, 90-93	FLAGG FIG. 5021
CE PLATE 1/2" THK (2 1/32" DIA. HOLE)	TO S.S. AIR COMP.	372		BETH STD. BS-2-UF
ELBOW L.R. BUTT WELD		372	155, 90-93	TUBE TURN PT.# 1-R
LBOW LONG RAD. BUTT WELD			155, 90-93	TUBE TURN PT.# 1
DING SLEEVE				BETH. EF-496 FIG. 1
CE PLATE 1/8" THK. (1/4" DIA. HOLE)	ATMOS. DRAIN TK. OIL DETECTOR SAMPLE COOLER	372		BETH STD. BS-2-UF [illegible]
ELBOW LONG RAD. BUTT WELD	SEA WATER TO BILGE	372	90-93	TUBE TURN PT.# 1
LBOW				PT.# 5
LE COOLING COIL	OIL DETECTOR	372		BULL & ROBERTS A-260-450
LET IPS RUN x SILBRZ OUTLET	SEA WATER COOLING	372	181, 90-93	BONNEY FORGE
x F.P.T. OUTLET			175	
OLET BUTT WELD	SEA WATER COOLING	372	191, 90-93	BONNEY FORGE
GHT TEE			191, 90-93	COONEY PT.# X60-STX60
NG SILBRAZE	SALT WATER SERVICE		181, 90-93	FLAGG. FIG. 5057
CE PLATE 1/8" THK. (1 3/32" DIA. HOLE)	S.W. SERV. PUMP RECIRC. TO LOW SEACHEST	372		BS-2-UF TYPE "A"
CING COUPLING SCR'D.		181	90-93	FLAGG FIG 1140
D. PENET. RING	OVB'D. DISCH		DET. "4-A" M4650-311-15	
D.			"10-A"	
D.			"4-B"	
BUTT WELD			155, 90-93	TUBE TURN PT.# 20
DUCING ELBOW LONG RAD. B.W.				PT.# 7-R

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STRUCTURAL MODULAR UNIT APPLICATION

8

LIST OF FITTINGS

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	
504503					AC-552	6	1/2"	30	88°	200#	—	—	CAST BRONZE	B-62	TEE SILBRAZE	SALT WATER SERVICE
					AC-553	2	[illegible]				—	—			TEE SILBRAZE x SILBRAZE x F.P.T.	
504503-M				5	AC-554	2	[illegible]				—	—			TEE RED. SILBRAZE	
				5	AC-555	1	1"x1"x1/2"				—	—				
504503					AC-556	3	[illegible]				—	—				
					AC-557	1	1 1/2"x2"x2"				—	—				
					AC-558	4	[illegible]				—	—				
					AC-559	2	[illegible]				—	—				
					AC-560	1	[illegible]				—	—				
					AC-561	2	2"x3/4"				—	—			BUSHING	
					AC-562	2	3/4"x1/4"				—	—				
					AC-563	10	3/4"x1/2"				—	—			MALE SILBRAZE x F.P.T.	
					AC-564	2	2"x1 1/2"				—	—			SILBRAZE	
	504503-C			2	AC-565	2	2"x1"				—	—				
					AC-566	3	2 1/2"x2"				—	—				
					AC-567	4	1"x3/4"				—	—				
504503-G				2,3	AC-568	4	2"			800#	—	—			UNION	
	504503-H			1,2,3,4	AC-569	22	1"				—	—				
				3	AC-570	3	1/2"				—	—				
				1	AC-571	10	1 1/2"				—	—				
					AC-572	1	1 1/4"				—	—				
				2,3	AC-573	9	3/4"				—	—				
504508	504508-C			5	AC-574	2	3/4"			250	—	—		B-62	Y STRAINER W/NI-CU SCREEN .062 PERF.	
					AC-575	3	1/2"				—	—				
	504508-B			2	AC-576	14	5"			150#	—	—			FLGD. 1/4"	
					AC-577	3	2 1/2"				—	—				
504502					AC-578	1	12"			200#	.250"	—	90-10 CU-NI	—	90° L.R. ELBOW BUTT WELD	
					AC-579	12	5"x3"				.125"	—		—	REDUCER - CONCENTRIC	
					AC-580	1	12"x6"				.250"	—		—		
	504502-F			3	AC-581	6	8"				.148"	—		—	45° ELBOW	
504508					AC-582	1	5"			150#	—	—	BRONZE	B-62	FLGD. F&D. DUPLEX STRAINER W/ NI-CU BASKET 3/16" PERF. - YOKE COVER, 4 TO 1 RATIO (MIN.)	
504505					AC-583	1	10"x1"			150#	—	—	BRONZE	B-283	BRAZOLET IPS RUN x F.P.T. OUTLET	
					AC-584	1	8"x1"				—	—				
	504505-A	504505-E		2,5	AC-585	22	5"x1"				—	—				
	-C			2,3	AC-586	5	5"x1/2"				—	—				
	-C			2,3	AC-587	3	6"x1/2"				—	—				
504505					AC-588	1	3"x1 1/4"				—	—				
					AC-589	1	3"x1 1/2"				—	—			x SILBRAZE	
504503					AC-590	2	2 1/2"			200#	—	—	CAST BRONZE	B-62	TEE SILBRAZE	
					AC-591	3	[illegible]				—	—			TEE RED. SILBRAZE x FPT x SILBRAZE	
					AC-596	1	2 1/2"x1"				—	—			BUSHING SILBRAZE	
					AC-592	1	2 1/2"x1 1/2"				—	—				
504502-B	504502-G			1,4	AC-597	4	12"			—	.250"	—	90-10 CU-NI	—	SLEEVE	
	504502-D	[illegible]		1,2,5,7	AC-598	78	10"			—	.250"	—		—		
			504502-H	1,2,5,6	AC-599	49	8"			—	.187"	—		—		
504502-B		504502-F	504502-J&P	1,2,3,5,6	AC-600	72	6"			—	.148"	—		—		
504502-B			504502-S(H)&P	1,2,3,5,6	AC-601	147	5"			—	.134"	—		—		
504502-B		504502-J	504502-H&P	1,2,5,6	AC-602	83	4"			—	.125"	—		—		
				1	AC-603	16	6"x5"			—	.134"	—		—	90° REDUCING ELBOW BUTTWELD	
	504502-D			1,2	AC-604	6	5"x4"			—	.125"	—		—		
504503-B	504503-K			1,6	AC-605	12	2 1/2"			200#	—	—	CAST BRONZE	B-62	COUPLING SILBRAZE	
504508A				1	B-500	2	8"	25	—	150#	—	—	BRONZE	B-62	FLANGED DUPLEX STRAINER W/NI-CU BASKET, 3/16" PERF. - BOLTED COVER; 4 TO 1 RATIO (MIN.)	BILGE AND CLEAN BA
504508	504508-E			2	B-501	6	2"		—	250#	—	—	BRONZE	B-62	Y STRAINER SCRD. W/NI-CU SCREEN 3/64" PERF.	
				2	B-502	7	1/2"		—		—	—				
UAO				2,3	B-503	[illegible]	1/2"		—	150#	—	—	NI-CU	B-127	ORIFICE PLATE 1/8" THK. W/ 1/4" DIA. ORIFICE	
504520				2	B-504	1	1 1/2"x2"x2"		—	150#	—	—	BRONZE	B-61	FLANGED EDUCTOR	
* UAO				2	B-505	1	8"		—	—	—	—	GALV. STEEL	—	BILGE STRAINER - SPLIT CLAMP TYPE	
*				2	B-506	2	4"		—	—	—	—		—		
*				2	B-507	3	2"		—	—	—	—		—		
SUPPLY					B-508	8	1/4"		—	40	.088	B36.10	GALV. STEEL	A106 GR. B	PIPE NIPPLE - 4" LG - THRD. BOTH ENDS	
504502	SUPPLY			2	B-509	9	10"		—	STD. WT.	.365"	B16.9	GALV. SMLS. STEEL	A234, GR. WPB	90° ELBOW, L.R. BUTTWELD	
SUPPLY		SUPPLY		2,8	B-510	40	8"		—	40	.322"					
				2,5	B-511	18	6"		—		.280"					
				2	B-512	20	4"		—		.237"					
				2,3	B-513	14	3"		—		.216"					
				2	B-514	5	2 1/2"		—		.203"					
504502					B-515	4	12"		—		.406"				45°	
	504502-D			2	B-516	15	8"		—		.322"					
	504502-B	504502-D		1,2	B-517	6	6"		—		.280"					
	504502-B			1	B-518	4	4"		—		.237"					
					B-519	1	3"		—		.216"					
					B-520	2	12"x8"		—		.375"x.322"				REDUCER CONCENTRIC	
					B-521	1	10"x6"		—		.365"x.280"					
					B-522	1	10"x8"		—		.365"x.322"					
	504502-D			2	B-523	3	8"x6"		—		.322"x.280"					
					B-524	2	6"x4"		—		.280"x.237"					
					B-525	2	3"x2"		—		.216"x.154"					
SUPPLY				2,4	B-526	38	2"		—	3000#	—	B16.11	GALV. FORGED STL.	A-105	90° ELBOW - SOCK. WELD.	
				2,8	B-527	15	1 1/2"		—	150#	—	B16.3	MALL IRON	A-197	- BANDED SCRD.	
				8	B-528	9	1 1/4"		—		—					
				8	B-529	2	1"		—		—					
				8	B-530	48	1/2"		—		—					
504503-A				8	B-531	1	2"x1"		—		—				RED.	
504508				8	B-532	8	1/2"x1/4"		—		—				RED. COUPLING	
				8	B-533	1	2"x1 1/4"		—		—					
SUPPLY				4,8	B-534	10	2"		—	3000#	—	B16.11	FORGED STL.	A-105	TEE - SOCK. WELD.	
				8	B-535	4	1 1/2"		—	150#	—	B16.3	MALL. IRON	A-197	TEE - BANDED SCRD.	
504503	504503-C			2,8	B-536	6	1 1/2"x1 1/4"		—		—	B16.14			HEX. BUSHING	
	504503-F			4,8	B-537	5	2"x1/2"		—	3000#	—	B16.11	FORGED STL.	A-105	REDUCING INSERT - SOCK. WELD.	
504503-J	504503-R			2,4,6,8	B-538	49	2"		—		—	—			UNION - SOCK. WELD.	
Supply				2,8	B-539	6	1 1/2"		—	300#	—	—	MALL IRON	A-197	- BRONZE TO IRON SEAT - SCRD.	
				2,8	B-540	10	1 1/4"		—		—	—				
				8	B-541	15	1/2"		—		—	—				
504505					B-542	1	8"x2"		—	3000#	—	—	GALV. FGD. STL.	A-105	THREADOLET, IPS RUN & OUTLET	
	504505-A			2	B-543	2	8"x1 1/2"		—		—	—				
	504505-B	504505-F	504505-G	2,6,8	B-544	6	8"x1/2"		—		—	—				
504502					B-545	1	8"		—	40	.322	B16.9	GALV. SMLS. STEEL	A234, GR. WPB	180° L.R. RETURN BUTT WELD	
504516	504516-A			1	B-546	3	2"		—	—	—	—	GALV. STEEL	A-216, GR. WCB	DECK DRN. W/BRZ. STRAINER SCRD.	
					B-547	1	3"		—	—	—	—			BUTT WELD	
504502-A				1	B-548	2	12"		—	40	.375	B16.9	GALV. SMLS. STEEL	A234, GR. WPB	45° ELBOW, L.R. BUTT WELD	
504502-B	504502-D	504502-M		1,2,7	B-549	10	10"	—	—	40	.365					
504502-B				1	B-550	1	10"	—	—	120	.844				90°	HEEL'G. SYS.
UAO				1,2	B-551	3	1 1/2"	—	—	—	—	—	NO. 12-USS-GA. STL.	—	FUNNEL - TYPE "A" (A=6", B=3", C=4", D=1 1/2")	DISTILLER PLANT
* UAO				1	B-552	1	20.4	—	—	—	—	—	ABS HULL STL.	—	16" O.D. x 10 7/8" I.D. PENET. RING	OVB'D DISCH-
* UAO				1,2	B-553	15 FT		—	—	—	—	—		—	GUSSET, PLATE - CUT TO SUIT	
UAO				1	B-554	40	10"	—	—	—	—	—	STEEL	A519-GR.1018	WELDING SLEEVE	BILGE & BALLAST
UAO				1,6	B-555	41	8"	—	—	—	—	—				

7 * NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

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SERVICE	JOB NO.	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG OR FIG. NO. OR EQUAL
E CORRECTION	182	191, 90-93	COONEY PT# X40-90 LRX (MOD)
		181, 90-93	BONNEY FORGE
		181, ↓	
GAGE CONN. (EDUCTOR)		170,	
INT DRAIN		175, ↓	↓
↓		90-93	FLAGG FIG #4173
		181, 90-93	FLAGG FIG #5004
			#5050
			#5001
			#5201
		↓	#5050
			EF-496 FIG 3A
			↓
		90-93 & 191	COONEY PT.
		↓	↓
		& 181	FLAGG FIG #5050
		& 181	FLAGG-FIG.#5001
		191	COONEY PT.
		191	↓
	181	181, 90-93	TATE 15-20F-150
		90-93	BONNEY FORGE
		155, 90-93	TUBE TURN PT.# 43
			BETH.EF-496 FIG.1
			↓
			EF-355-A
		90-93	BONNEY FORGE
			EF-355-A
		155, 90-93	BONNEY FORGE
		155, 90-93	↓
		155, 90-93	TUBE TURN PT.# 20
			BETH.STD. EF-496 FIG.2
		90-93	BONNEY FORGE
		171 ↓	BONNEY FORGE
		90-93	↓
		155	TUBE TURN P.R.
		175	BONNEY FORGE
		↓	↓
			TUBE TURN PT #92
4650-111-22	↓		
			BULL & ROBERTS #01441
			B240-401
		90-93	FLAGG-FIG.#1140
DUCT. STRAINERS	181		
COOLING	372	170, 90-93	COONEY PT.# X50-90X40
		↓	COONEY PT.# X50-90LRX (MOD)
		157,181, 90-93	FLAGG. FIG# 5021
		181, 90-93	
↓	↓	↓	↓
ETURN	372		BS-2-UF TYPE "A"
		175,181, 90-93	FLAGG FIG.# 5023
	↓	181, 90-93	# 5060
OOLING	372	#181 & #90-93	BONNEY FORGE
		#191 & #90-93	COONEY PT# X60 STX60
		#181 & #90-93	FLAGG. FIG.# 5021
			# 5060
			# 5021
		↓ ↓	# 5063
		181 - 90-93	MERCER STYLE NO. 500
↓		#181 & #90-93	FLAGG. FIG.# 5060
			#5062
			5060
			5021
		↓ ↓	5021
	↓		EF-496 FIG# 3A
	372	90-93	FLAGG-FIG.# 4171
		181 & 90-93	FLAGG-FIG.# 5021
LERS		90-93	
LT.			BETH STD EF-496 FIG 3A
COIL		181, 90-93	FLAGG FIG 5050
			5060
COOLER			5060
↓	↓	↓ ↓	5004
	181	90-93	FLAGG FIG. 2071
		175, 90-93	FLAGG FIG. 1731
LING	372	#181 & 90-93	FLAGG FIG #5021
↓	↓	#157,181 & 90-93	↓
		#90-93, 191	COONEY PT#
	↓	↓ 191	↓
		90-93	FLAGG FIG. 5062
		181 & 90-93	FLAGG-FIG.# 5021

STRUCTURAL MODULAR UNIT APPLICATION

FITTING IDENT. NO.	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT	UNIT	UNIT 13	UNIT 14	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	182 12-7
AC-606						1																			
AC-607						1																			
AC-608	9					1																			
AC-609	1					1																			
AC-610			1			1			2																
AC-611	5	1				1																			
AC-612						1																			
AC-613	1					4																			
AC-614																									
AC-615																									
AC-616						1																			
AC-617						1																			
AC-618						2																			
AC-619						2		1					2												
AC-620						4																			
AC-621														1											
AC-622														1											
AC-623				1	4					4															
AC-624																									
AC-625				2																					
AC-626				2																					
AC-627				4																					
AC-628				2																					
AC-629																									
AC-630				1																					
AC-631				4																					
AC-632						2																			
AC-633						2																			
AC-634						2																			
AC-635		1																							
AC-636		1	3	3																					
AC-637	4	1																							
AC-638		1																							
AC-639		2																							
AC-640	4																								
AC-641	1																								
AC-642	1																								
AC-643	1																								
AC-644	1																								
AC-645	1																								
AC-646	1																								
AC-647	1																								
AC-648	1																								
AC-649	1																								
AC-650	1																								
AC-651	2																								
AC-652	6				4																				
AC-653	2																								
AC-654										3															
AC-655	2																								
AC-656										2															
AC-657										2															
AC-658									1	3															
AC-659										1															
AC-660	1	1	1																						
B-556								1						3											1
B-557	9	35		30						6				8											
B-558		23				1								13											
B-559		8												32											
B-560		5						9						16											
B-561		1																							
B-562						1																			
B-563				3																					
B-564				9				1																	
B-565				2																					
B-566		1																							
B-567	1																								
B-568		1																							
B-569	1			1																					
B-570	1			1																					
B-571	1			1																					
B-572	1																								
B-573	15	15	17	17	4	4	4	4																	
B-574						2																			
B-575				6																					
B-576			5	5																					
B-577				1																					
B-578		1																							
B-579		1																							
B-580		1																							
B-581		1																							
B-582		1																							
B-583		1																							
AC-661				2																					
AC-662				1																					
AC-663								2	2	2															
AC-664									1	1															
AC-665	1																								
AC-666	2																								
AC-667	8																								
AC-668	1																								
AC-669	1																								
AC-670						1																			
AC-671						1																			
AC-672	1																								
AC-673		1																							
AC-674		1																							
AC-675					4					4															
AC-676										2															
AC-677					2																				
AC-678			3																						
AC-679		1											4												
AC-680	1																								
B-584	3																								
B-585	1																								
B-586	1																								
B-587	1																								
B-588			1																						
B-589			1																						1

LIST OF FITTINGS

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	JOB No	SPECIAL NOTES FROM REF# 1
								P.S.I.	°F									
504502-B	504502-H			1,6	AC-606	13	8"x4"	30	88	—	.148	—	90-10 CU-NI	—	CONCENTRIC REDUCER-BUTTWELD	SEA WATER COOLING	372	90-93, 191
				1	AC-607	1	5"x2½"			—	.125	—		—				
	504502-D			1,2	AC-608	10	4"x2½"			—	.109	—		—	↓			
				1,2	AC-609	2	8"			—	.148	—		—	STRAIGHT TEE			
				1,2	AC-610	5	5"			—	.125	—		—	↓			
	↓			1,2	AC-611	7	10"x10"x8"			—	.187	—		—	REDUCING			
				1	AC-612	1	10"x10"x5"			—	.187	—		—				
↓				1	AC-613	6	8"x8"x5"			—	.148	—	↓	—	↓		↓	↓
UAO				1	AC-614	2	3"			—	—	—	STEEL	—	DECK SLEEVE			90-93
504503-B				1	AC-615	2	3"x2½"x2"			200#	—	—	CAST BRONZE	B 62	REDUCING TEE SILBRAZE			90-93, 181
				1	AC-616	3	2½"x2½"x2"				—	—						
				1	AC-617	1	2"x1½"x2"				—	—			↓			
				1	AC-618	2	1½"x1"				—	—			BUSHING			
	504503-G			1,3	AC-619	5	1"				—	—			ADAPTER -FEM. THR'D.xM. SIL-BRZ			↓
↓	504503-K			1,6	AC-620	4	2"	↓	↓	↓	—	—	↓	↓	ELBOW 90° SILBRAZE	↓	↓	175
UAO				1	AC-621	1	1"			—	—	—	90-10 CUNI	—	NIPPLE, DET "6-A; W/CAP & CHAIN, DET 6-C			
UAO				1	AC-622	1	1"	↓	↓	—	—	—	STEEL	A53,TY.E or S,GR.B	DECK SLEEVE	↓	↓	90-93
	504502-D			2	AC-623	10	6"x5"	30	88	—	.134	—	90-10 CU-NI	—	CONCENTRIC REDUCER-BUTT WELD	SEA WATER COOLING	372	90-93, 191
					AC-624													
504503-C				2	AC-625	2	2½"x1½"	30	88	200#	—	—	CAST BRONZE	B 62	REDUCING COUPLING SILBRAZE	SEA WATER COOLING	372	90-93, 181
				2	AC-626	2	¾"				—	—			ADAPTER - MALE THR'D.x SILBRAZE			
↓				2	AC-627	4	½"	↓	↓	↓	—	—	↓	↓	- MALE THR'D.x SILBRAZE			↓
504507				2	AC-628	2	2½"			150#			RUBBER		EXPANSION JT. FLG'D. (6" FACE TO FACE)			189, 90-93
504505-A				2	AC-629	1	5"x¾"	30	88	150#	—	—	BRONZE	B-283	BRAZOLET RUN & OUTLET; I.P.S. FPT			90-93, 175
↓				2	AC-630	1	6"x¾"			↓	—	—		↓	↓			90-93, 175
SUPPLY				2	AC-631	4	¾"	↓	↓	125#			↓	B 62	PLUG - SCR'D			90-93
504502-D				2	AC-632	2	4"x4"x2½"	30	88	200#	.109	—	90-10 CU-NI	—	REDUCING TEE - BUTT WELD			90-93, 191
				2	AC-633	2	4"x4"x2"				.109	—		—	↓			
				2	AC-634	2	4"x2"				.109	—		—	CONCENTRIC REDUCER			
				2	AC-635	1	12"				.250	—		—	45° ELBOW			
				2	AC-636	7	6"				.134	—		—	↓			
				2	AC-637	5	4"				.109	—		—	STRAIGHT TEE			
↓				2	AC-638	1	4"x1½"			↓	.109	—	↓	—	CONCENTRIC REDUCER			↓
UAO				2	AC-639	2	4"	↓	↓	—	—	—	STEEL	A519 GR.1015	DECK SLEEVE	↓	↓	
504502-D				2	AC-640	4	10"	30	88	200#	.187	—	90-10 CU-NI	—	STRAIGHT TEE - BUTT WELD	SEA WATER COOLING	372	191, 90-93
				2	AC-641	1	10"x6"				.187	—		—	REDUCING 90° ELBOW			
↓				2	AC-642	1	10"			↓	.187	—	↓	—	90° ELBOW SHORT RAD.			↓
504505-A				2	AC-643	1	10"x3½"			150#	—	—	BRONZE	B-283	BRAZOLET RUN & OUTLET; I.P.S. SIL BRZ			181,
504505-A				2	AC-644	1	8"x¾"			↓	—	—	↓	↓	ELBOWOLET; F.P.T. OUTLET (FOR 8" ELBOW)			175
504502-D				2	AC-645	1	8"x5"			200#	.148	—	90-10 CU-NI	—	90° ELBOW REDUCING - BUTT WELD			191,
				2	AC-646	1	8"			↓	.148	—	↓	—	90° ELBOW SHORT RAD.			↓
				2	AC-647	1	8"			120#	.719	B-16.9	GALV.SML'S.STL	A-234 GR.WPB	45° ELBOW			155
↓				2	AC-648	1	8"x8"x6"			200#	.148	—	90-10 CU-NI	—	REDUCING TEE			191
504505A				2	AC-649	1	8"x2½"			150#	—	—	BRONZE	B-283	BRAZOLET RUN & OUTLET; I.P.S. SIL-BRZ			181
504502-D				2	AC-650	1	10"			120#	.844	B-16.9	GALV.SML'S.STL	A-234 GR.WPB	45° ELBOW BUTT WELD			155
↓				2	AC-651	2	10"x5"			200#	.187	—	90-10 CU-NI	—	CONCENTRIC REDUCER -			191,
504505-A				2	AC-652	10	10"x5"				—	—		—	WELDOLET RUN & OUTLET; I.P.S.			
504502-D				2	AC-653	2	5"			↓	.125	—	↓	—	90° ELBOW SHORT RAD.			↓
504503-C				2	AC-654	3	2½"x2"			200#	—	—	BRONZE	B-62	90° ELBOW, REDUCING SILBRZ		↓	181
504505-A				2	AC-655	2	10"x4				—	—	90-10 CU-NI	—	WELDOLET RUN & OUTLET; I.P.S. BUTT WELD		372	90-93
504503-C				2	AC-656	2	2"x1½"x2"				—	—	BRONZE	B-62	REDUCING TEE SILBRZ			181, 90-93
				2	AC-657	2	1"x¾"x¾"				—	—			↓			
↓				2	AC-658	4	2"x¾"				—	—			COUPLING SILB. RED.			
				2	AC-659	1	1½"x1"	↓	↓	↓	—	—	↓	↓	ADAPTER MPT x SILB	↓		↓
504502-D				2	AC-660	3	6"x4"	30	88	200#	.134	—	90-10 CU-NI	—	CONCENTRIC REDUCER BUTT WELD	SEA WATER COOLING	↓	191, 90-93
UAO				1,2	B-556	5	2"	—	—	—	—	—	STEEL	A53,TY.E or S,GR.B	PENETRATION SLEEVE	BILGE & BALLAST	181	
				1,2,3,4	B-557	88	8"	—	—	—	—	—		A519 GR.1015	WELDING SLEEVE			
				1,2,3,4	B-558	37	6"	—	—	—	—	—		↓				
				1,2,3	B-559	40	4"	—	—	—	—	—		A53,TY.E or S,GR.B				
↓				1,2,3,4	B-560	30	3"	—	—	—	—	—	↓	A519 GR.1015	↓	↓	↓	
* UAO				2	B-561	1	3"	—	—	—	—	—	GALV. STEEL	—	BILGE STRAINER - SPLIT CLAMP TYPE	BILGE & BALLAST	181	
* ↓				2	B-562	1	½"	—	—	—	—	—	No12-USS GA.STL.	A 525	FUNNEL-TYPE "A" (A=10", B=3", C=5", D=½")			
504505-A				2	B-563	3	2"x½"			3000#		—	FORG.STL.GALV.	A 105	THREDOLET RUN & OUTLET; I.P.S			170, 90-93
504503-H				2,4	B-564	10	2"			3000#		B16.3	FORG.STL.GALV	A 105	45° ELBOW, S.W.			155, 90-93
↓ -C				2	B-565	2	½"			150#		B16.14	MALL.IRON GALV.	A 197	PLUG COUNTERSUNK HEAD			90-93
504502-D				2	B-566	1	6"x5"	25	—	40	.280x.258	B-16.9	GALV.SML'S.STL	A-234 GR.WPB	REDUCING 90° ELBOW BUTT WELD			155, 90-93
↓				2	B-567	1	10"x8"				.365x.322							
SUPPLY				2	B-568	1	5"	↓		↓	.258	↓	↓	↓	90° ELBOW LONG RAD.			↓
* UAO				2	B-569	2	¾"	—	—	—	—	—	GALV. STL.	A525	FUNNEL-TYPE "A" (A=6", B=3", C=4", D=¾")			
*				2	B-570	2	1"	—	—	—	—	—			(A=9", B=3", C=6", D=1")			
* ↓				2	B-571	2	2½"	—	—	—	—	—	↓	↓	TYPE #16	↓	↓	
504502-D				2	B-572	1	8"x5"	25	—	40	.322x.258	B-16.9	GALV.SML'S.STL	A-234 GR.WPB	REDUCING 90° ELBOW BUTT WELD	BILGE & BALLAST	181	155, 90-93
* UAO		B870-9	~~REB~~	2,4,6	B-573	1	90"x120"						STEEL	ABS GR.A	20.4# STL. PL'T: SEE GEN.NOTE 1 FOR [illegible]	BILGE DISCH. DOUBLER PLATE	↓	SECT. "14-C" ON REF. #2 FOR
UAO				2,3	B-574	2	2"	—	—	—	—		GALV. STL		DECK DRAIN W/ BRASS STRAINER PL.		181	
SUPPLY				2	B-575	6	3"	30	88	40	.216	B-16.9	SML'S.STL. BLK.	A-234 GR.WPB	90° ELBOW LONG RAD. BUTT WELD	BOILER WASH DOWN DRAINS		155, 90-93
504502-D	504502-G			2,4	B-576	10	3"	↓	↓	↓	↓	↓	↓	↓	45° ELBOW	↓		↓
UAO				2	B-577	1	2"	—	—	150#	—		STN STL.	TY. 316	ORIFICE PLT. ⅛" THK. (1¼" DIA.HOLE)			
504502-D				2	B-578	1	8"x5"	25	—	40	.322x.258	B16.9	GALV.SML'S.STL	A-234 GR.WPB	CONCENTRIC REDUCER BUTT-WELD			155, 90-93
504503-C				2	B-579	1	2"			3000#	—	—	FORG. STEEL GALV.	A 105	UNION ORIFICE ASS'Y - 1¼" DIA. HOLE, SCR'D.			90-93
504502-D				2	B-580	1	12"x8"			120#	1.00x.719	B16.9	GALV.SML'S.STL.	A-234 GR.WPB	CONCENTRIC REDUCER BUTT WELD			155, 90-93
				2	B-581	1	6"				.562				45° ELBOW			
↓				2	B-582	1	4"			↓	.438	↓	↓	↓	↓			↓
UAO				2	B-583	1	2½			—	—		NIPPLE-STL.GALV. & FLG	A-53 TY.E/S A-105	FLG'D. HOSE ADAPTER-MOD. W/CAP & CHAIN-DET. 6-C	(DET. "6-B", FIG. #2 - (FLG TO BE FLAT FACED)		NIPPLE: DET "6-A", IT. "10"
504505-A				2	AC-661	2	2½"x¾"	30	88	200#	—	—	BRONZE	B-283	BRAZOLET I.P.S. RUN x F.P.T. OUTLET		372	181, 90-93
* UAO				2	AC-662	1	18"x48"						STEEL	ABS GR.A	15.3# PLATE		372	DET. "13-A", M4650-111-18
504503-C	504503-G			2,3	AC-663	6	[illegible]	30	88	200#	—	—	BRONZE	B-62	TEE REDUCING SILBRZ	SEA WATER COOLING	372	181, 90-93
UAO				2	AC-664	2	¼"	↓	↓	150#	—	—	90-10 CU-NI	—	ORIFICE PLATE ⅛" THK. ([illegible] DIA. HOLE)	↓ TO S.S. AIR COMP.	372	
504502-D				2	AC-665	1	6"x5"			40	.280x.258	B16.9	GALV.SML'S. STEEL	A-234 GR.WPB	90° RED. ELBOW L.R. BUTT WELD		372	155, 90-93
SUPPLY				2	AC-666	2	5"			40	.258	↓		↓	90° ELBOW LONG RAD. BUTT WELD			155, 90-93
UAO				2	AC-667	8	5"			40			STEEL	A53 TY.E or S GR.B	WELDING SLEEVE		↓	
↓				2	AC-668	1	½"			150#	—	—	90-10 CU-NI	B402	ORIFICE PLATE ⅛" THK. (¼" DIA. HOLE)	ATMOS. DRAIN TK. OIL DETECTOR SAMPLE COOLER	372	
					AC-669													
SUPPLY				2	AC-670	1	4"	—	88	40	.237	B16.9	SML'S.STEEL	A234 GR.WPB	90° ELBOW LONG RAD. BUTT WELD	SEA WATER TO BILGE	372	90-93
504502-D				2	AC-671	1	4"	—	↓	↓	↓	↓	↓	↓	45° ELBOW	↓	↓	↓
500076				2	AC-672	1	½"								SAMPLE COOLING COIL	OIL DETECTOR	372	
504505-A				2	AC-673	1	5"x½"	30	88	150#	—	—	BRONZE	B-283	BRAZOLET IPS RUN x SILBRZ OUTLET	SEA WATER COOLING	372	181, 90-93
↓				2	AC-674	1	6"x1"				—	—			↓			
504505-F				2,6	AC-675	8	5"x½"				—	—			x F.P.T. OUTLET			175
-A				2	AC-676	2	2½"x1"	↓	↓	↓	—	—	↓	↓	↓	↓	↓	↓
↓ -A				2	AC-677	4	10"x2½"	30	88	200#	—	—	90-10 CU-NI	—	WELDOLET RUN & OUTLET; I.P.S. BUTT WELD	SEA WATER COOLING	372	191, 90-93
504502-D				2	AC-678	3	6"	↓	↓	↓	.134	—	↓	—	STRAIGHT TEE			191, 90-93
504503-C	504503-V	504503-V		2,8	AC-679	5	1"x½"			200#			CAST BRONZE	B-62	BUSHING SILBRAZE	SALT WATER SERVICE	↓	181, 90-93
UAO				2	AC-680	1	1"	—	—	150#	—	—	90-10 CU-NI	B402	ORIFICE PLATE ⅛" THK. ([illegible] DIA. HOLE)	S.W. SERV. PUMP RECIRC. TO LOW SEACHEST	372	
504503-C				2	B-584	3	1½"x1¼"	25	—	150#	—	B16.3	GALV. MALL. IRON	A-197	REDUCING COUPLING SCR'D.		181	90-93
* UAO				2	B-585	1	20.4#	—	—	—	—	—	ABS GR.A	—	23" O.D. PENET. RING	OVB'D. DISCH		DET. "4-A" M4650-111-15
*				2	B-586	1		—	—	—	—	—		—	21" O.D.			"10-A"
* ↓				2	B-587	1	↓	—	—	—	—	—	↓	—	24" O.D.	↓		"48"
504502-D				2	B-588	1	2½"	30	88	40	.203	B16.9	SML'S.STL.GALV	A-234 GR.WPB	TEE BUTT WELD			155, 90-93
↓				2	B-589	2	2½"x2"	↓	↓	↓	.203x.154	↓	↓	↓	90° REDUCING ELBOW LONG RAD. B.W.		↓	↓

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-7

FRAME 4 OF 5

LIST OF FITTINGS

CODE NO. (FUTURE USE)	ALT. NO	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	JOB NO.	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
	2	F-551	2	4"x2½"	150#	85	200#	.109	—	90-10 CU-NI	—	90° REDUCING ELBOW BUTT WELD	FIRE MAIN - SHORE CORRECTION	182	191, 90-93	COONEY PT# X40-90LRX (MOD)
	2	F-552	1	8"x2"			150#	—	—	BRONZE	B-283	BRAZOLET I.P.S. RUN x SILBRZ OUTLET			181, 90-93	BONNEY FORGE
	2,3,6	F-553	5	8"x½"				—	—						181,	
	2,3	F-554	1	2"x½"				—	—			XFPT OUTLET	PRESS GAGE CONN. (EDUCTOR)		175,	
	2,3	F-555	8	8"x¾"				—	—				LOW POINT DRAIN		175,	
	2,3	F-556	3	¾"			125#	—	—		B-62	PIPE PLUG WITH SQUARE HEAD			90-93	FLAGG FIG. #4173
	2,5	F-557	2	2½"			200#	—	—	CAST BRONZE	B-62	45° ELBOW SILBRAZE			181, 90-93	FLAGG FIG. #5004
	2,3	F-558	10	2½"				—	—			COUPLING SILBRAZE				#5050
	2	F-559	2	2"				—	—			90° ELBOW SILBRAZE				#5001
	2,3	F-560	5	2"				—	—			UNION SILBRAZE				#5201
	2	F-561	1	2"x1¼"				—	—			REDUCING COUPLING SILBRAZE				#5050
	2,3	F-562	6	8"						STEEL	A519 GR.1015	DECK/BHD. SLEEVE				EF-496 FIG 3A
	2,3	F-563	4	4"												
	2,3	F-564	8	2½"												
	2	F-565	1	2"							A53 [illegible] GR.B					
	3	F-566	1	8"								(5" LONG)				
	3	F-567	2	6"	150	85	200#	.134	—	90-10 CU-NI	—	45° ELBOW BUTT WELD			#90-93 & 191	COONEY PT. X90-45LRX
	3	F-568	1	6"x6"x3"				[illegible]	—		—	REDUCING TEE				X80-RTx30
	3	F-569	1	8"x8"x6"				[illegible]	—		—					X80-RTx30
	3	F-570	1	4"x4"x3"				[illegible]	—		—					X40-RTx30
	3	F-571	1	4"x4"x2½"				[illegible]	—		—					X40-RTx25
	3	F-572	12	6"				.134	—		—	WELDING SLEEVE				
	3	F-573	6	5"				.134	—		—					
	3	F-574	1	3"				—	—	CAST BRONZE	B-62	COUPLING SILBRAZE			& 181	FLAGG FIG. #5050
	4	F-575	1	1¼"				—	—			90° ELBOW - SILBRAZE			& 181	FLAGG-FIG. #5001
	6	F-576	10	3"			150#	.095	—	90-10 CU-NI	—	WELDING SLEEVE			191	COONEY PT. X300-SLVXX
	6	F-577	10	2½"			150#	.095	—		—				191	X25-SLVXX
	2	B-590	1	2½"	30	88	150#	—	—	BRONZE	B-62	FLGD. SIMPLEX STRAINER OFFSET TYPE W/NICU BASKET, W/ ⅛ PERFOR. BOLTED COVER 4 THRU [illegible] MIN.		181	68,179, 90-93	TATE 15-20F-150
	2	B-591	8	¾"			3000#	—	B16.11	FORGED STEEL	A-234	SCR'D. COUPLING			90-93	BONNEY FORGE
	2	B-592	1	2½"	25	—	160	.375	B16.9	GALV. SML'S. STL	A234 GR.WPB	90° ELBOW LONG RAD. BUTT WELD	BILGE & BALLAST		155, 90-93	TUBE TURN PT.# 43
	2	B-593	1	2½"	—	—	—	—	—	STEEL GALV.	A53 [illegible] GR.B	WELDING SLEEVE				BETH. EF-496 FIG.1
	2	B-594	1	2"	—	—	—	—	—							
	2	B-595	1	8"x8"	—	—	15.3# RT.			STEEL	ABS GR A	DOUBLER PLATE			DET. "12-A" M4650-[illegible]	
	2	B-596	1	7"x10"	—	—						GUSSETS			12-B-2	
	2	B-597	1	1½"	—	—	—	—	—	STEEL	A 525	FUNNEL TYPE 12				EF-355-A
	2	B-598	1	2"			3000#	—	B16.11	FGD. STEEL	A 234	COUPLING SCR'D.			90-93	BONNEY FORGE
	2	B-599	1	2"	—	—				GALV. STEEL	A 525	FUNNEL TYPE 14				EF-355-A
	2,4	B-600	6	2"x2"x½"			3000#	—	B16.11	GALV. FORGED STL.	A-105	S.W. REDUCING TEE	BILGE & BALLAST		155, 90-93	BONNEY FORGE
	2,4	B-601	1	2"x½"								S.W. RED. COUPLING			155, 90-93	
	2	B-602	1	3"			40	.216	B16.9	GALV. SML'S STL	A234 GR.WPB	STRAIGHT TEE			155, 90-93	TUBE TURN PT.# 20
	2	B-603	1	2½"			—	—	—	STEEL	A-53 TY.E [illegible]	BHD. SLEEVES				BETH. STD. EF-496 FIG.2
	2,3	B-604	5	2"			3000#	—	B16.11	FORGED STEEL	A-234	SOCKET WELDING ELBOW			90-93	BONNEY FORGE
	2,3	B-605	1	12"x2"	—	—	3000#	—	—	CARBON STEEL	A-105	SOCKOLET I.P.S. x SCH 160 SOCKLET			171,	BONNEY FORGE
	3	B-606	1	1"			3000#	—	B16.9	FORGE ST'L GALV.	A-105 GR.II	SCR'D COUPLING			90-93	
	3	B-607	1	1"			80	.179	B16.10	STEEL	A53 TYPE [illegible] GR.B	PIPE NIPPLE THR'D (1) 12" LG				
	3	B-608	1	8"x6"	25		40	—	B16.9	GALV. SMLS STL	A234 GR.WPB	REDUCING ELBOW 90° L.R. B.W.	HEELING SYSTEM		&155	TUBE TURN I-R
	3	B-609	1	8"x2"			3000	—	—	FORGED STL	A105	ELBOLET - I.P.S. - RUN x OUTLET S.W.			&171	BONNEY FORGE
	3	B-610	1	8"x1½"			3000					SCRD.				
	3	B-611	2	5"x2"			40	.258/.154	B16.9	SMLS ST'L	A234 GR.WPB	ECCENTRIC REDUCER				TUBE TURN PT #92
	3	B-612	40'-0"	3"x3"x5/16"						STEEL	ABS GR. A	3"x3"x5/16" THK. ANGLE (CUT TO GUS[illegible]	SEE DET. "13-C" DWG. #M-4650-111-22			
	4	B-613	1	½"	—	—	—	—	—	—	—	SAMPLE FLOW INDICATOR	BILGE OIL DETECTOR			BULLER ROBERTS #01441
	4	B-614	1	½"	—	—	—	—	—	—	—	BILGE OIL DETECTOR				E240-401
	4	B-615	2	½"	—	—	150#	—	B16.24	M.I. GALV.	A-197	COUPLING-SCRD.			90-93	FLAGG-FIG. #1140
	6	B-616	1							STL ABS GR.A		48"x24"x20.4# RT (CUTS 8 PCS.)	DOUBLER PLTS FOR BILGE SUCT. STRAINERS	181		
	2	AC-681	2	5"x5"x4"	30	88	200#	.125	—	90-10 CU-NI	—	REDUCING TEE BUTT WELD	SEA WATER COOLING	372	191, 90-93	COONEY PT# X50-RTX40
	2	AC-682	2	5"x3"				.125	—		—	90° REDUCING ELBOW L.R.				COONEY PT# X50-90LRX (MOD)
	2	AC-683	2	2½"x1½"x2½"				—	—	CAST BRONZE	B-62	REDUCING TEE SILBRAZE			157,181, 90-93	FLAGG. FIG# 5021
	2	AC-684	2	2½"x2½"x2"											181, 90-93	
	2	AC-685	2	2½"x2½"x2½"												
	2	AC-686	2	1½"	30	88	150#	—	—	90-10 CU-NI	B-402	ORIFICE PLATE ⅛" THK. W/ 15/16" DIA. HOLE	VACUUM PUMP S.W. RETURN	372		BS-2-UF TYPE "A"
	2,4	AC-687	3	1½"x1½"x1"			200#	—	—	CAST BRONZE	B-62	REDUCING TEE - SILBRAZ x SILBRAZ x FEM. THD.			175,181, 90-93	FLAGG. FIG. # 5023
	2	AC-688	4	1½"x1½"				—	—			ADAPTER - SILBRAZ x MALE THD.			181, 90-93	# 5060
	2,5	AC-689	5	6"x1"	30	88	150#	—	—	BRONZE	B-283	BRAZOLET I.P.S. RUN x F.P.T. OUTLET	SEA WATER COOLING	372	#181 & #90-93	BONNEY FORGE
	2	AC-690	1	6"			—	.134	—	90-10 CU-NI	—	STRAIGHT TEE			#191 & #90-93	COONEY PT# X60-SRX60
	2	AC-691	2	2½"x2½"x[illegible]			200#	—	—	CAST BRONZE	B-62	REDUCING TEE SILBRAZE			#181 & #90-93	FLAGG. FIG. # 5021
	2,3	AC-692	6	1"				—	—			ADAPTER - SILBRAZE x M.P.T.				# 5060
	2	AC-693	1	1½"x1½"x1½"				—	—			REDUCING TEE SILBRAZE				# 5021
	2	AC-694	1	1½"x1"				—	—			ADAPTER - SILBRAZE x F.P.T.				# 5063
	2	AC-695	2	1½"			150#	—	—	RUBBER	—	EXPANSION JOINT FGD. (6" FACE TO FACE)			189 - 90-93	MERCER STYLE No. 500
	2	AC-696	1	1¼"			200#	—	—	CAST BRONZE	B-62	ADAPTER - SILBRAZE x M.P.T.			#181 & #90-93	FLAGG. FIG. # 5060
	3	AC-697	4	½"			200#	—	—			COUPLING SILBRAZE				#5050
	3	AC-698	6	½"				—	—			ADAPTER - C x M.P.T.				5060
	3	AC-699	1	1½"x¾"x1½"			200#	—	—			RED. TEE - SIL BRAZE				5021
	3,4	AC-700	1	1"x½"x1"				—	—							5021
	3	AC-701	2	1½"					—	STEEL	A53 TY.E OR S GR.B	DECK SLEEVE	GARBAGE CHUTE			EF-496 FIG# 3A
	4,6	AC-702	17	2"x½"	—	—	—	—	—	BRONZE	B-62	BUSHING - SCRD.		372	90-93	FLAGG-FIG. #4171
	4	AC-703	1	1½"	—	—	200#	—	—	BRONZE	B-62	TEE - SILBRAZE			181 & 90-93	FLAGG-FIG. #5021
	5	AC-704	1	¾"	—	—	—	—	—	BRONZE		SIGHT FLOW INDICATOR SCRD. FEM. ENDS	FEED PUMP L.O. COOLERS		90-93	[illegible]
	5	AC-705	2	1¼"	—	—	—	—	—	STEEL	A53 TY.E OR S GR.B	DECK SLEEVE	DEHUMID. DECK PENET.			BETH. STD. EF-496 FIG. 3A
	5	AC-706	1	1½"x1¼"			200#	—	—	BRONZE	B-62	REDUCING COUPLING SIL-BRAZ	DEHUMIDIFIER COOL. COIL.		181, 90-93	FLAGG FIG. 5050
	5	AC-707	1	1¼"x1"			200#	—	—	BRONZE	B-62	REDUCING COUPLING SIL-BRAZ				5050
	5	AC-708	2	¾"			200#	—	—	BRONZE	B-62	ADAPTER F-SIL-BRAZ x M-SCRD	MN. FD. PUMP L.O. COOLER			5060
	5	AC-709	1	¾"			200#	—	—	BRONZE	B-62	45° ELBOW SIL BRAZ.				5004
	5	B-616	5	1"x¾"	—	—	—	—	B16.14	MALL. IRON GALV.	A-197	BUSHING SCRD.		181	90-93	FLAGG FIG. 2071
	5	B-617	10	¾"	—	—	300#	—	—			UNION SCRD. BRZ. TO IRON SEATS			175, 90-93	FLAGG FIG. 1731
	5,6	AC-710	3	5"x3"x1½"	30	88	200#	—	—	BRONZE	B-62	REDUCING TEE SILBRAZE	SEA WATER COOLING	372	#181 & 90-93	FLAGG FIG. #5021
	5,6	AC-711	3	3"x2½"x1½"				—	—		B-62				#157,181 & 90-93	
	6	AC-712	6	2½"	—	—	150#	.095	—	90-10 CU-NI	—	SLEEVE			#90-93, 191	COONEY PT# [illegible]
	6	AC-713	6	2"	—	—	150#	.083	—						191	[illegible]
	6	AC-714	3	1¼"x½"	30	88°	200#	—	—	BRONZE	B-62	ADAPTER - MALE THR'D x SILBRAZE (FEM)			90-93	FLAGG FIG. [illegible]
	7	AC-715	2	1¼"x1"x½"	—	—	200#	—	—	BRONZE	B-62	TEE - SILBRAZE			181 & 90-93	FLAGG-FIG. #[illegible]

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-02-7

FRAME 5 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-03-1

FRAME 1 OF 2

LIST OF PIPES

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF. #1
507944	507944-M			1,7	D-1	600'-0"		600'-0"	1/2"	40	.109	50	212°	B36.10	CARBON STEEL	A53 TY. 'E' OR 'S', GR. B		II		NOTES #128, 135
	507944-F			1,5	D-2	520'-0"		520'-0"	3/4"		.113									
	507944-G			1,6	D-3	246'-0"		246'-0"	1"		.133									
	507944-H			1,7	D-4	80'-0"		62'-0"	1 1/4"		.140									
	507944-E	507944-F		1,4,5	D-5	200'-0"		200'-0"	1 1/2"		.145									
		507944J		1,4,5,7	D-6	320'-0"		320'-0"	2"		.154									
				1,4,5	D-7	50'-0"		50'-0"	2 1/2"		.203									
				1,3,5	D-8	100'-0"		100'-0"	3"		.216									
				1	D-9	8'-0"		8'-0"	5"		.258									
507944		507944-F		1,3,5	D-10	40'-0"		40'-0"	1/4"		.088									
		507944-E 507944-H		1,2,4,5,7	D-11	220'-0"		220'-0"	1/2"		.109	150	411°		SEAMLESS CARBON STEEL	A106 GR. B				#128, 135, 136
				1	D-12	20'-0"		20'-0"	1 1/4"		.140									
				1	D-13	155'-0"		155'-0"	1/2"	80	.147									
				1	D-14	109'-0"		109'-0"	1/2"		.147	871	955°		CHROME MOLY STEEL	A335 GR. P11		I		#128, 136
				1	D-15	15'-0"		15'-0"	1"		.179							I		
				1	D-16	22'-0"		22'-0"	3/8"	40	.091	50	212°		CARBON STEEL	A53 TYPE E OR S GR. B		II		#128, 135
	507944-E	507944-F		1,4,5	D-17	140'-0"		140'-0"	3/4"	80	.154	866	555		SEAMLESS	A106 GR. B		I		NOTES #128, 135, 136
507944-D				3	D-18	20'-0"		20'-0"	2"	80	.218							I		
				3	D-19	80'-0"		80'-0"	1"	80	.179							I		
507944	507944-A			1,2,3,5	D-20	100'-0"		100'-0"	3/4"	80	.154	1060	955°		SEAMLESS CHROME MOLY STEEL	A335 GR. P11	H.P. TURBINE THROTTLE VALVE TO AUTO. DRAIN VALVE	I		NOS. 128, 136
				1,2,3,5	D-21	40'-0"		40'-0"	1"	80	.179	1060	955°				STEAM CHEST & STRAINER TO AUTO. DRAIN VALVE	I		
				2	D-22	6'-0"		6'-0"	3/8"	80	.126							I		

LIST OF VALVES

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD #	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	PIN WHERE REQ'D	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO.
					D-100																	
507900					D-101	2	2 1/2"	-	212	150#	B16.10	CAST STEEL	A216-GR.WCB	STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	GLOBE	NOS. 4,6,90-93	LUNK'NH'MR. FIG. 1542
	507900-G			5	D-102	3	1/2"	-		200#	—	BRONZE	B61	BRZ.	BRZ	BRZ.	-	SCR'D	B2.1	GLOBE STOP-CHECK	1,90-93	POWELL FIG. 134
		507900-H		5,6	D-103	15	3/4"	-			—					—	MONEL			SWING CHECK	90-93	560-Y
				5,6	D-104	11	1/2"	-			—					BRZ	-			GLOBE	1,90-93	110
					D-105	4	1"	-			—					-	MONEL			SWING CHECK	90-93	560-Y
					D-106	1	1 1/4"				—					-						560-Y
					D-107	16	1/2"	-			—		B61			-	MONEL		B2.1		NOS. 90-93	POWELL FIG. 560-Y
				5	D-108	32	1/2"	871	955	1500#	B16.10	CHROME MOLY	A182-GR.F-11	STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	GLOBE	4,5,90-93	EDWARD FIG. 1028
		507900-B		4,5	D-109	16	3/4"	150	411	150#	—	FORGED STEEL	A105				-			- BOLTED BONNET	4,90-93	LUNK'NH'MR. FIG. 1710-MOD.
				7	D-110	15	1/2"			600#	—	FORGED STEEL		STAINLESS	STAINLESS	STAINLESS	-	SCR'D	B2.1	GLOBE	4,5,90-93	EDWARD FIG. 848
					D-111	12	1/2"	810	555		B16.10						-	FLGD., F.F.D.	B16.5		4,5,90-93	828
					D-112	7	1/2"			600#	B16.10						-				4,5,90-93	828
					D-113	1	2"	-	212	200#	—	BRONZE	B61	BRZ	BRZ	BRZ.	-	SCR'D	B2.1	GLOBE STOP-CHECK	1,90-93	POWELL FIG. 134
					D-114	1	3/4"	-			—						-			ANGLE	1,90-93	LUNK'NH'MR. FIG. 408
					D-115	3	1 1/2"	-			—						-			GLOBE	1,90-93	POWELL 110
				4	D-116	6	1"	-			—						-			GLOBE STOP-CHECK	1,90-93	134
					D-117	1	1"	871	955	1500#	B16.10	CHROME-MOLY	A182-GR.F-11	STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	GLOBE	4,5,90-93	EDWARD FIG. 1028
					D-118	1	3"	-	212	150#		CAST STEEL	A216-GR.WCB				-				4,6,90-93	LUNK'NH'MER. FIG. 1542
					D-119	1	3"	-								-	MONEL			SWING CHECK	4,10,90-93	1572
	507900-G			3,5,6	D-120	11	1/2"	150	411	150#	—	FORGED STEEL	A105			STAINLESS	-			GLOBE - BOLTED BONNET	4,90-93	FIG. 1710-MOD.
				2	D-121	1	2 1/2"	-	212	300#	—	BRONZE	B61	BRZ	BRZ	BRZ	-		B16.24	SOLENOID 3-WAY 120 V-60 CYCLE ENERG. TO OPEN, DE-ENERG TO DUMP	NO. 96	RUGGLES & KLINGEMAN #141-229-MOD.
507900					D-122	5	3/4"	-	212	200#	—	BRONZE	B61	BRZ	BRZ	BRZ	-	SCR'D	B2.1	GLOBE	NOS. 1,90-93	POWELL FIG. 110
					D-123	1	3/4"	-			—						-			GLOBE STOP CHECK	1,90-93	134
					D-124	3	1/2"	-		150#	—	FORGED STEEL	A105	STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	GLOBE - BOLTED BONNET	4,90-93	LUNK'NH'M'R. FIG. 1710 MOD.
					D-125	1	1/2"	-		600#	—	FORGED STEEL					-	SCR'D	B2.1		4,5,90-93	EDWARD FIG. 848
					D-126	1	3/8"	-			—						-				4,5,90-93	848
					D-127	6	1"	150	411	150#	—	FORGED STEEL		STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	- BOLTED BONNET	4,90-93	LUNK'NH'M'R. FIG. 1710 MOD.
	507900-H			5,6	D-128	32	3/4"	871	955	1500#	B16.10	CHROME-MOLY	A182-GR.F-11				-				4,5,90-93	EDWARD FIG. 1028
					D-129	2	3/4"	150	411	150#		FORGED STEEL	A105				-			GATE	4,6,90-93	LUNK'NH'M'R. FIG. 1100W
507900-C	507900-H			2,6	D-130	3	3/4"	-	212	200#	—	BRONZE	B61	BR'Z	BR'Z	BR'Z	-	SCR'D	B2.1	- RISING STEM	1,90-93	POWELL FIG. 375
				8	D-131	2	3/4"			600#	B16.10	FORGED STL	A-105	S.S.	S.S.	S.S.	—	FLGD. F&D	B16.5	GLOBE	4,5,90-93	EDWARDS FIG. 828
				3,5	D-132	2	3/4"											S.W.			VENDOR FURNISHED	848Y
				3,5	D-133	2	1"					CAST STEEL	A216 GR. WCB					S.W.		CONDENSATE CONTROL VALVE		FISHER TYP 667ES
					D-134	1	1"	-		700#	—	—	—	—	—	—	-	FLGD	—	AUTOMATIC DRAIN VALVE	W/MN. PROPULSION	VENDOR FURNISHED
				3	D-135	1	1/4"			600#	—	FORGED STL	A-105	S.S.	S.S.	S.S.		SOCK WELD	—	GLOBE VALVE	NOS. 4,5,90-93	EDWARDS 848Y
				5	D-136	2	1"	-	—	600#									—	BALL CHECK VALVE	NOS. 90-93	EDWARDS 2672Y

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	11/8/76		ADDED LIST OF PIPES	WF	
2	6-2-77		1. INC. D-20 FROM 12'0" TO 20'0" D-21 FROM 13'0" TO 20'0" 2. ADDED PC # D-130 3. ADDED D-22 4. REVISED D-121, SIZE WAS 2", END TYPE WAS SCR'D; ADDED MFR., RELEASED RES., APPLIED SPL. NOTE #96	E.L. D.L.B. Secc	G.G. SHARP LTR DATED 7-18-77
3	10-11-77	2 2	1- INCR. THE QTY OF: D-8 (40'-80') D-10 (2'-20'), D-11 (29'-40'), D-20 (20'-100'), D-21 (20'-40'), D-104 (6-10), D120 (3-4), D128 (16-24). 2- ADDED D-17 TO D-19, D-131 TO D133 & D-135	PCG	
4	12-1-77		1- INCR. LG/QTY. OF D-5 (95'-154'), D-6 (155'-248'), D7 (15'-50'), D-11 (35'-178'), D17 (60'-114'), D107 (8-15), D109 (11-13) & D116 (5-6). 2- ADDED D106	PCG	12/5/77
5	3-3-78		1. ADDED D-136. 2. INCREASED THE QTY FOR: D-102 (2-3), D-103 (9-14), D-108 (25-32), D-109 (13-16), D-120 (4-9), D-2 (395' TO 520'), D-5 (95' TO 200'), D-6 (155' TO 280'), D-8 (40' TO 100'), D-10 (2' TO 40'), D-11 (29' TO 200'), D-17 (60' TO 140'), D-7 (15' TO 50'), D-20 (20' TO 100'), D-21 (20' TO 40'). 3. REVISED D-132 END TYPE FROM FLG'D F&D TO S.W. REVISED D-133 BODY MAT'L. FROM FORGED STL. TO CAST STL. AND END TYPE FROM FLG'D F&D TO S.W.	RHM	3-7-78
6	9/26/78		1- INCR THE QTY OF D-3 (200'-0" TO 246'-0"), D103 (14-15), D104 (10-11) D120 (9-11), D128 (24-32) & D130 (2-3)	P.G.	9/5/78
7	9/29/78 12-5-78		1- QUANT. OF ITEM D-4 CHANGED FROM 62' TO 80', AND ITEM D-11 FROM 200' TO 220' PER Y.I.S. M-4650-22-283 2- ITEM D-6 INCR. FROM 280' TO 320' PER Y.I.S. 4650-22-320 3- ITEM D-1 INCR. FROM 475' TO 600', AND ITEM D-110 INCR. FROM 11 TO 15	P.G.	12/12/78

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE: -
DATE: AUG. 26, 1976
DRAWN: R.J.F.
APPROVED:
TRACED: -
APPROVED:
CHECKED: -
APPROVED:

PLAN NO. M-4650-372-03-1
ALT. NO. 7

PIPE & VALVE LIST FOR STEAM & FRESH WATER DRAINS

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

DATE OF ISSUE

ALTERATION	1	2	3	4	5	6	7
ENGINEERING DISTRIBUTION	[illegible]	6-7-77	10-20-77	12-9-77	3-9-78	10-4-78	12-18-78
MAIL: OWNERS		4	3	3	3	3	3
AMERICAN BUREAU							
LLOYD'S R.S.							
U.S.M.A.							
U.S. NAVY							
U.S.C.G.							
JOINER CONT'R.							
INSPECTION: OWNER'S INSP.		1	1	1	1	1	1
AM. BU. INSP.							
LLOYD'S INSP.							
U.S.M.A. INSP.	1	1	1	1	1	1	1
U.S. NAVY INSP.							
U.S.C.G. INSP.							
OFFICE: HULL DRAFT.-21	1	1	1	1	1	1	1
MACH. DRAFT.-22	2	2	2	2	2	2	2
ELEC. DRAFT.-23	1	1	1	1	1	1	1
OUTFIT DRAFT.-25							
ESTIMATING							
J. DOUGHERTY (210)	1	1	1	1	1	1	1
MISC.: PRODUCTION (SCD)							
ORDER DEPT.							
JOINER CONT. YARD							
WILLIAMS - PURCHASING	1						
TOTAL ENG'R. DIST.	13	11	10	10	10	13	13
YARD DISTRIBUTION							
TOTAL YARD DIST.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

YARD: PIECE RATE - 11; TEST DEPARTMENT; QUALITY ASSURANCE; GROUND ASSEMBLY
STRUCTURAL: NO. WAY; NO. WAY; NO. WAY; NO. WAY; STRUCT. SUPER.; OPTICAL DETAIL-40; WET DOCK
MACH'Y & OUTFIT: PIPE SHOP - 52; OUTFIT. #1 PIER; PIPE DRAFT. - 52; BOILER SHOP - 58; OUTSIDE MACH. - 60; ELECTRIC SHOP - 70; SHEET MET. SHOP - 74; COPPER SHOP - 51; PAINT SHOP - 78; WELDING
OTHER: MOLD LOFT - 41; BRACKET SHOP

M-724

80.PT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-372-03-1

NOV 1980 10X

FRAME 2 OF 2

LIST OF PIPES

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

PIPE IDENT.	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #	UNIT #6	UNIT #7	UNIT #8	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #13	UNIT #	UNIT #15	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #
D-1	20'	120'	100'	100'			20'	20'					140'		20'-0											
D-2	4'	100'	100'	80'		180							30'													
D-3	6'	150'					65'						5'		20'-0											
D-4		50'													20'-0											
D-5	4'	150'											40'													
D-6	3'	240'		45'		1'	12'																			
D-7	10'	40'																								
D-8		70'				4	20'																			
D-9	8'																									
D-10							20'	20'																		
D-11			100	5'				30'					40		20'											
D-12																										
D-13								40'					50'													
D-14		10'	10'	15'		15'																				
D-15																										
D-16																										
D-17				30'				6'					90'													
D-18								6'																		
D-19				30'				20'																		
D-20			50'	30											40-0											
D-21															40-0											
D-22				4'																						

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D.			SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA		ANSI DIM. STD	DESCRIPTION	A.S.T.M. SPEC.	SE
						BLK.	GALV.	TOTAL				P.S.I.	°F				
507944	507944-M			1,7	D-1	600'-0"		600'-0"	1/2"	40	.109	50	212°	B36.10	CARBON STEEL	A53 TY.'E' OR 'S', GR. B	
	507944-F			1,5	D-2	520'-0"		520'-0"	3/4"		.113						
	507944-G			1,6	D-3	246'-0"		246'-0"	1"		.133						
	507944-H			1,7	D-4	80'-0"		62'-0	1 1/4"		.140						
	507944-E	507944-F		1,4,5	D-5	200'-0"		200'-0"	1 1/2"		.145						
		507944-J		1,4,5,7	D-6	320'-0"		320'-0"	2"		.154						
				1,4,5	D-7	50'-0"		50'-0"	2 1/2"		.203						
	[illegible]			1,3,5	D-8	100'-0"		100'-0"	3"		.216						
P.S. #1609				1	D-9	8'-0"		8'-0"	5"		.258						
507944	[illegible]	507944-F		1,3,5	D-10	40'-0"		40'-0"	1/4"		.088						
	[illegible]	507944-E 507944-H		1,3,4,5,7	D-11	220'-0"		220'-0"	1/2"		.109	150	411°		SEAMLESS CARBON STEEL	A106 GR. B	
				1	D-12	20'-0"		20'-0"	1 1/4"		.140						
				1	D-13	155'-0"		155'-0"	1/2"	80	.147						
				1	D-14	109'-0"		109'-0"	1/2"		.147	871	955°		CHROME MOLY STEEL	A335 GR. P11	
				1	D-15	15'-0"		15'-0"	1"		.179						
				1	D-16	22'-0"		22'-0	3/8"	40	.091	50	212°		CARBON STEEL	A53 TY.'E' OR 'S' GR. B	
[illegible]	507944-E	507944-F		3,4,5	D-17	140'-0"		140'-0"	3/4"	80	.154	866	555		SEAMLESS	A106 GR. B	
507944-D				3	D-18	20'-0"		20'-0"	2"	80	.218						
				3	D-19	80'-0"		80'-0"	1"	80	.179						
507944	507944-A	507944-B		1,2,3,5	D-20	100'-0"		100'-0"	3/4"	80	.154	1060	955°		SEAMLESS CHROME MOLY STEEL	A335 GR. P11	H.P. TURBINE THROTTLE
		507944-D		1,2,3,5	D-21	40'-0"		40'-0"	1"	80	.179	1060	955°				STEAM CHES
				2	D-22	6'-0"		6'-0"	3/8"	80	.126						

LIST OF VALVES

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

VALVE IDENT.	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #	UNIT #6	UNIT #7	UNIT #8	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #13	UNIT #	UNIT #15	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #
D-100																										
D-101	2																									
D-102		3																								
D-103		2	6	6									1													
D-104	3	6				1		1																		
D-105		1													1											
D-106		1																								
D-107		3	17																							
D-108		1	9	9		5																				
D-109		10				3							3													
D-110			12																							
D-111																										
D-112																										
D-113		1																								
D-114	1																									
D-115	3																									
D-116		5													1											
D-117																										
D-118																										
D-119																										
D-120						1		3					2		5											
D-121	1																									
X																										
D-122																										
D-123																										
D-124																										
D-125																										
D-126																										
D-127							3						3													
D-128			16	16																						
D-129																										
D-130						2							1													
D-131							1	1																		
D-132							1	1																		
D-133							1	1																		
D-134															1											
D-135								1																		
D-136			1	1																						

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		PRESS STD #	ANSI DIM. STD	BODY MATERIAL	ASTM SPEC.	TRIM				END TYPE	ANSI DIM. STD	
								P.S.I.	°F					SEAT	DISC	STEM	PIN WHERE REQ'D			
					D-100															
					D-101	2	2 1/2"	-	212	150#	B16.10	CAST STEEL	A216-GR.WCB	STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	GLO
507900	507900-G			5	D-102	3	1/2"	-		200#	—	BRONZE	B61	BRZ	BRZ	BRZ.	-	SCR'D	B2.1	GLO
		507900-H		5,6	D-103	15	3/4"	-			—					-	MONEL			SWI
	Supply			3,6	D-104	11	1/2"	-			—					BRZ	-			GLO
					D-105	4	1"	-			—					-	MONEL			SWIN
507900-F				4	D-106	1	1 1/4"				—					-				
507900	507900-F			4	D-107	15	1/2"	-			—		B61			-	MONEL		B2.1	
	507900-G			5	D-108	32	1/2"	871	955	1500#	B16.10	CHROME-MOLY	A182-GR.F-11	STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	GLOB
	507900-F	507900-G		4,5	D-109	16	3/4"	150	411	150#	—	FORGED STEEL	A105				-			
	507900-J			7	D-110	15	1/2"			600#	—	FORGED STEEL		STAINLESS	STAINLESS	STAINLESS	-	SCR'D	B2.1	GLOB
					D-111	12	1/2"	810	555		B16.10						-	FLGD., F.F.D.	B16.5	
					D-112	7	1/2"			600#	B16.10						-			
					D-113	1	2"	-	212	200#	—	BRONZE	B61	BRZ	BRZ	BRZ.	-	SCR'D	B2.1	GLOB
					D-114	1	3/4"	-			—						-			ANGL
					D-115	3	1 1/2"	-			—						-			GLOB
	507900-K	507900-E		4	D-116	6	1"	-			—						-			GLOB
					D-117	1	1"	871	955	1500#	B16.10	CHROME-MOLY	A182-GR.F-11	STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	GLOB
					D-118	1	3"	-	212	150#		CAST STEEL	A216-GR.WCB				-			
					D-119	1	3"	-								-	MONEL			SWIN
	507900-E	507900-G	507900-H	3,5,6	D-120	11	1/2"	150	411	150#	—	FORGED STEEL	A105			STAINLESS	-			GLO
507900-A				2	D-121	1	2 1/2"	-	212	300#	—	BRONZE	B61	BRZ	BRZ	BRZ	-		B16.24	SOLEN ENERG
					X															
507900					D-122	5	3/4"	-	212	200#	—	BRONZE	B61	BRZ	BRZ	BRZ	-	SCR'D	B2.1	GLOB
					D-123	1	3/4"	-			—						-			GLOBE
					D-124	3	1/2"	-		150#	—	FORGED STEEL	A105	STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	GLOB
					D-125	1	1/2"	-		600#	—	FORGED STEEL					-	SCR'D	B2.1	
					D-126	1	3/8"	-			—						-			
					D-127	6	1"	150	411	150#	—	FORGED STEEL		STAINLESS	STAINLESS	STAINLESS	-	FLGD., F.F.D.	B16.5	
	507900-E	507900-H		3,6	D-128	32	3/4"	871	955	1500#	B16.10	CHROME-MOLY	A182-GR.F-11				-			GATE
					D-129	2	3/4"	150	411	150#		FORGED STEEL	A105				-			
507900-C	507900-A			2,6	D-130	3	3/4"	-	212	200#	—	BRONZE	B61	BR'Z	BR'Z	BR'Z	-	SCR'D	B2.1	
507900-E				3	D-131	2	3/4"	—	—	600#	B16.10	FORGED ST'L	A-105	S.S.	S.S.	S.S.	—	FLGD. F&D	B16.5	GLOB
500001				3,5	D-132	2	3/4"	—	—								—	S.W.		
				3,5	D-133	2	1"	—	—			CAST STEEL	A216 GR.WCB				—	S.W.		CONDEN
500002					D-134	1	1"	-		900#	—	—	—	—	—	—	-	FLGD	—	AUTOM
507900-E				3	D-135	1	1/4"			600#	—	FORGED STL	A-105	S.S.	S.S.	S.S.	—	SOCK WELD	—	GLOBE
507900G				5	D-136	2	1"	—	—	600#									—	BALL

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-03-2

FRAME 1 OF 2

LIST OF FLANGES

REQUISITION NO.	ALT NO.	FLANGE IDENT NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
	1,3	D201	13	2½"	50#	212°	SERVICE	150#	16.5	FORGED STL	A105	SOCKET WELDING F.&D. BORE FOR SCH. 40			90-93	TUBE TURN PART NO. 150
	1,3,4	D202	35	¾"	↓	↓		↓		↓	↓	↓			↓	150
	1,4	D203	14	1"	↓	↓		↓		↓	↓	↓				150
		D204	1	1"	871#	955°		1500#		FRG. CR. MOLY	A-182 GR.F-11	SOCKET WELDING BORE FOR SCH 80				1558
	1,4,5	D205	76	¾"	↓	↓		↓		↓	↓	↓				1558
	4	D206	62	½"	↓	↓		↓		↓	↓	↓				1558
		D207	2	2"	50#	212°		150#		FORGED STL	A105	SOCKET WELDING FLAT FACE BORE FOR SCH. 40				150
		D-208	22	½"				600#		↓	↓	BORE FOR SCH. 80				152
		D-209	14	½"				300#		↓	↓	↓				151
		D-210	5	1"				600#		FRG. CR. MOLY	A182 GR.F-11	SOCKET WELDING BORE FOR SCH 80				152
		D-211	4	1"				300#		FORGED STL	A105	80				151
		D-212	3	1¼"				300#				40				151
	2	D-213	12	3"				150#				SLIP-ON WELDING				50
		D-214	12	½"				150#				SOCKET WELDING BORE FOR SCH 40				150
	1	D-215	1	1½"	↓	↓	↓	↓	↓	↓	↓	↓			↓	150
	1	D-216	1	1½x¾	↓	↓	↓	↓	↓	↓	↓	SLIP ON WELDING REDUCING			↓	
	1	D-217	1	2½"	↓	↓	↓	↓	↓	↓	↓	SOCKET WELDING F/D, FLAT FACE BORE FOR SCH 40			↓	TUBE TURN PART NO. 150
	2	D-218	15	1"				600#				80			90-93	152
	2	D-219	2	¾"				600#				80			↓	152
		D-220	7	¾"	1060	955°	1590	1500#	16.5	FRG CR MOLY	A182 GR F11	SOCKET WELDING F.&D. BORE FOR SCH 80	H.P. TURBINE STEAM CHEST, STRAINER & THROTTLE VALVE TO AUTOMATIC DRAIN VALVE		90-93	TUBE TURN PT. NO. 1558
		D-221	11	1"	1060	955°	1590	1500#	16.5	↓	↓	↓	↓		90-93	1558
	2	D-222	1	1"	1060	955°	1590	600#	16.5			SOCKET WELD LARGE FEMALE			90-93	TUBE TURN
	2	D-223	2	1"	1060	955°	1590	900#	16.5			↓			↓	TUBE TURN
	4	D-224	2	3"	50#	212°	SERVICE	300#	16.5	FORGED STL	A105	SOCKET WELD F&D BORE FOR SCH 40	FEED PUMP REL VALVE (R.V. 8)		90-93	TUBE TURN PT. #151
	4	D-225	1	2"				300#	16.5	↓	↓	↓	PORT FD PUMP REL VALVE (R.V. 9)		↓	#151
	4	D-226	1	2"	↓	↓	↓	150#	16.5	↓	↓	↓	PORT FD PUMP RECIRC LINE-R.V. #7		↓	#150
	5	D-227	1	1½"	29#	85°	SERVICE	150#	MIL-F-[illegible]	BRONZE	—	FLANGE SIL-BRAZE			↓	FLAGG FLOW 5075

LIST OF GASKETS

REQUISITION NO.	ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
	1,3	D-301	10	2½"	50#	212°	SERVICE	150#	B16.21	COMPRESSED ASBESTOS	D-1170 GRADE P[illegible]	RING-⅛" THK				JOHNS MANVILLE #60
		D-302	1	2"												
	2,4	D-303	14	1"												
	1,2,4	D-304	35	¾"	↓	↓		↓	↓	↓	↓	↓				↓
		D-305	2	1"	871#	955°		1500#	COMM'L	STAINLESS STL	COMM'L	SPIRAL WOUND-FLEXITALLIC STYLE "CG"			WITH CARBON STL OUTER GAUGE RING	
		D-306	64	¾"											↓	
	4	D-307	64	½"	↓	↓		↓							↓	
		D-308	38	½"	50#	212°		600#	↓	↓	↓	↓			↓	
		D-309	14	½"				300#	B16.21	COMPRESSED ASBESTOS	D-1170 GRADE P[illegible]	RING-⅛" THK				JOHNS MANVILLE #60
		D-310	3	1¼"				300#								
	2	D-311	8	3"				150#	↓	↓	↓	↓				↓
	2	D-312	4	1"				600#	COMM'L	STAINLESS STL	COMM'L	SPIRAL WOUND-FLEXITALLIC STYLE "CG"			WITH CARBON STL OUTER GAUGE RING	
	4	D-313	10	½"				150#	B16.21	COMPRESSED ASBESTOS	D-1170 GRADE P[illegible]	RING-⅛" THK				JOHNS MANVILLE #60
		D-314	4	1"				300#								
	1	D-315	1	1½"	↓	↓		150#								
	1	D-316	1	1½"	↓	↓		150#				↓				↓
	1	D-317	1	2½"	↓	↓	↓	↓	↓	↓	↓	FULL FACE-⅛" THK				
	2	D-318	4	¾"	50#	212°		600#	COMM'L	STN ST'L	COMM'L	SPIRAL WOUND-FLEXITALLIC STYLE "CG"			W/C.S. OUTER GUAGE RING	
		D-320	6	¾"	1060	955°	1590	1500#	COMM'L	STAINLESS STL	COMM'L	SPIRAL WOUND-FLEXITALLIC STYLE "CG"	H.P. TURBINE STEAM CHEST, STRAINER & ASTERN THROTTLE VALVE TO AUTOMATIC DRAIN VALVE		WITH CARBON STL OUTER GAUGE RING	
		D-321	10	1"	↓	↓	↓	↓	↓	↓	↓	↓	↓		↓	
	2	D-322	1	1"	1060	955°	1590	600#				LARGE MALE SPIRAL WOUND-FLEXITALLIC STYLE "R-1"			↓	
	2	D-323	2	1"	1060	955°	1590	600#	↓	↓	↓	↓			↓	
	4	D-324	2	3"	50#	212°	SERV.	300#	B16.21	COMPRESSED ASBESTOS	D-1170 GRADE P[illegible]	RING ⅛" THK	MN. FEED PUMPS REL VALVE			JOHNS-MANVILLE #60
	4	D-325	1	2"	↓	↓		300#	B16.21	↓	↓	↓	PORT FD PUMP REL. VALVE			↓
	5	D-326	1	1½"	29#	85°	SERV.	150#	B16.21	CLOTH INSERTED SBR RUBBER	D2000 SB-AA-805	FULL FACE ⅛" THK				JOHNS-MANVILLE #109

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.	ALT NO.	BOLTING IDENT NO.	AMT REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS (HEAVY HEX (2) PER STUD) MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	SERVICE	CODE NO.	REMARKS
		D-401	4	A193 SYM B16	⅞"	4¾"	B1.1 UNC-2A	A194 SYM 3	⅞"	B18.2.2 B1.1 UNC-2B	1500#	955°								D-204		
		D-402	256		¾"	4¼"	B18.2.1		¾"		↓	↓								D-205		
	1,4	D-403	256	↓	¾"	4"	↓	↓	¾"											D-206		
		D-404	20	A193 GR.B7	⅝"	3½"		A194 SYM 2H	⅝"		600#	212°								D-210, D-218		
		D-405	44		⅝"	3"			⅝"		300#									D-211, D-212, D-225		
		D-406	44		½"	3			½"		600#									D-208		
		D-407	56	↓	½"	2½"	↓	↓	½"	↓	300#									D-209		
	3	D-408	40								150#		A307 GR B HEAVY HEX HEAD CARBON STL MACHINED	⅝"	3¼"	B18.2.1 B1.1 UNC-2A	A307 GR B HEAVY HEX HEAD CARBON STL MACHINED SEMI-FINISHED	⅝"	B18.2.2 B1.1 UNC-2B	D-201		
	2	D-409	48											⅝"	3"			⅝"		D-213		
		D-410	8											⅝"	2¾"			⅝"		D-207		
	1,2,4	D-411	148											½"	2¼"			½"		D-202/D-215·D-216		
	2,4	D-412	48											½"	2"			½"		D-203		
	2,4	D-413	24								↓	↓	↓	½"	1¾"	↓	↓	½"	↓	D-214		
	2	D-414	16	A193 GR B7	⅝"	3¼"	B1.1 UNC-2A B18.2.1	A194 SYM 2H	⅝"	B18.2.2 B1.1 UNC-2B	866	550										
	4	D-415	16	↓	¾"	4"	↓	A194 SYM 2H	¾"	↓	↓	↓								D-224		
	5	D-416	8										A307 GR B HVY HEX HD CARB. STL BLK., MACHINED	½"	1¾"	B18.2.1 B1.1 UNC-2A	A307 GR B HVY HEX HD CARB. STL BLK. MACH. SEMI-FIN	½"	B18.2.2 B1.1 UNC-2B	D-227		
STUDS NUTS																						
	2	D-423	8	A193 SYM B16	⅞"	4½"	B1.1 UNC-2A	A194 SYM 3	⅞"	B18.2.2 B1.1 UNC-2B	1500#	955°								D-223		
		D-420	24	A193 SYM B16	¾"	4¼"	B18.2.1 B1.1 UNC-2A	A194 SYM 3	¾"	B18.2.2 B1.1 UNC-2B	1500#	956°										
		D421	32	↓	⅞"	4¾"	↓	↓	⅞"		↓	↓										
	2	D-422	4		⅝"	3¼"			⅝"	↓	600#	825°								D-222		

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4-20-77 6-8-77		1. INC. THE QTY OF THE FOLLOWING: D-220 (3-7) D-221 (8-11) D-320 (2-6) D-321 (6-10) D-420 (8-24) AND D-421 (24-32), D-201 (5-7), D-301 (5-7) 2. ADDED D-215 & D-315 3. CHG QTY OF D-411 (12-20) D-202 (2-3) D-304 (2-3) 4. ADDED PC'S D-216 & D-316 5. ADDED PC'S D-217 & D-317	(J.J.R.) G.L.W. R L SECC	LTR DATED [illegible]
2	10-5-77		1- INC QTY OF D-202 (3-23), D-203 (2-8) D-205 (25-56) D-213 (3-12) D-303 (3-8) D-306 (32-48) D-311 (4-8) D-312 (1-4) D-402 (64-192) D-403 (100-136) D-409 (16-48) D-411 (20-100) D-412 (8-24) D-413 (12-16) 2- ADDED D-218 & D-219, D-222 & D-223, D-318, D-322 & D-323, D-414, D-422, & D-423	PCG	10/8/77
3	11-25-77		1- INCR. QTY. OF: D-201 (7-13) D-301 (7-10) & D-408 (32-40).	PCG	12/5/77
4	3-3-78		1. ADDED D224, D225, D226, D-324, D-325, D-415. 2. INCREASED THE QTY FOR: D-202 (23-35), D-203 (8-14), D-205 (56-59), D-206 (42-62), D-303 (8-14), D-304 (23-35), D-307 (56-64), D-313 (8-10), D-403 (136-256), D-411 (100-148), D-412 (24-48), D-413 (16-24).	RWM	3-7-78
5	4/28/78		1- ADDED D-227, D-326 & D-416 PER V.S. NO. 4650-22-125. 2- INCR. QTY OF D-205 (59-76) D-304 (48-64) & D-402 (192-256)	PCG	5/78

HULL	DESIGN	CHARGE
4651	↓	↓
4650	27,390 DWT CONTAINER SHIP	8450

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE SEPT 30 1976
DRAWN WE
APPROVED
TRACED
APPROVED
CHECKED J.E.H.
APPROVED

PLAN NO. M4650-372-03-2
ALT. NO. 5

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR STEAM & FRESH WATER DRAINS IN MACH'Y SPACE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

M-725

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-372-03-2

NOV 1980 10X

FRAME 2 OF 2

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT 13	UNIT	UNIT 15	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
7	6																							
	20				7							6		2										
						6						6		2										
		37	37		1																			
	2	26	24		10																			
														6										
														1										
														4										
														3										
	10				2																			
					2		4					4												
														1										
					1																			
1																								
		1	1				5																	
							2																	
														7										
														11										
	1																							
						2																		
						1																		
						1																		
					1																			

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
507901	507901-A	507901-D	1,3	D-201	13	2½"	50#	212°	SERVICE	150#	16.5	FORGED STL	A105	SOCKET WELDING F.&D. BORE FOR SCH 40	
		507901-C&E	1,2,4	D-202	35	¾"									
			2,4	D-203	14	1"									
				D-204	1	1"	871#	955°		1500#		FRG. CR. MOLY	A-182 GR F-11	SOCKET WELDING BORE FOR SCH 80	
	507901-C	507901-H 507901-E	2,4,5	D-205	76	¾"									
	507901-E		4	D-206	62	½"									
				D-207	2	2"	50#	212°		150#		FORGED STL	A105	SOCKET WELDING "FLAT FACE" BORE FOR SCH 40	
				D-208	22	½"				600#				BORE FOR SCH. 80	
				D-209	14	½"				300#					
				D-210	5	1"				600#		FRG. CR. MOLY	A182 GR. F-11	SOCKET WELDING BORE FOR SCH 80	
				D-211	4	1"				300#		FORGED STL	A105	80	
				D-212	3	1¼"				300#				40	
	507901-C		2	D-213	12	3"				150#				SLIP-ON WELDING	
				D-214	12	½"				150#				SOCKET WELDING BORE FOR SCH 40	
507901-A			1	D-215	1	1½"									
			1	D-216	1	1½"×¾"								SLIP ON WELDING ·REDUCING	
			1	D-217	1	2½"								SOCKET WELDING F&D, FLAT FACE BORE FOR SCH 40	
507901-C			2	D-218	15	1"				600#				80	
			2	D-219	2	¾"				600#				80	
507901	507901-A		1	D-220	7	¾"	1060	955°	1590	1500#	16.5	FRG CR. MOLY	A182 GR F11	SOCKET WELDING F.&D. BORE FOR SCH 80	H.P. TURBINE STEAM VALVE TO AUTOMA
			1	D-221	11	1"	1060	955°	1690	1500#	16.5				
507901-C			2	D-222	1	1"	1060	955°	1590	600#	16.5			SOCKET WELD LARGE FEMALE	
			2	D-223	2	1"	1060	955°	1590	900#	16.5				
507901-E			4	D-224	2	3"	50#	212°	SERVICE	300#	16.5	FORGED STL	A105	SOCKET WELD F&D BORE FOR SCH 40	FEED PUMP REL
			4	D-225	1	2"				300#	16.5				PORT FD PUMP
			4	D-226	1	2"				150#	16.5				PORT FD PUMP
507901-F			5	D-227	1	1½"	29#	85°	SERVICE	150#	MIL-F-20042 TYPE	BRONZE	—	FLANGE SIL-BRAZE	

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT 13	UNIT	UNIT 15	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
7	3																							
						6						6		2										
	20				7							6		2										
		32	32																					
	2	26	26		10																			
														3										
														3										
	7				1																			
							3							1										
					2		4					4												
														4										
														1										
					1																			
1																								
							2																	
														6										
														10										
														1										
														2										
						2																		
						1																		
					1																			

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
SUPPLY			1,3	D-301	10	2½"	50#	212°	SERVICE	150#	B16.21	COMPRESSED ASBESTOS	D-1170 GRADE PHILA	RING-⅛" THK	
				D-302	1	2"									
			2,4	D-303	14	1"									
			1,2,4	D-304	35	¾"									
507924				D-305	2	1"	871#	955°		1500#	COMM'L	STAINLESS STL	COMM'L	SPIRAL WOUND-FLEXITALLIC STYLE "CG"	
	507924-B	507924-E	2,5	D-306	64	¾"									
	507924-D		4	D-307	64	½"									
SUPPLY				D-308	38	½"	50#	212°		600#					
507924				D-309	14	½"				300#	B16.21	COMPRESSED ASBESTOS	D-1170 GRADE PHILA	RING-⅛" THK	
				D-310	3	1¼"				300#					
SUPPLY			2	D-311	8	3"				150#					
			2	D-312	4	1"				600#	COMM'L	STAINLESS STL	COMM'L	SPIRAL WOUND-FLEXITALLIC STYLE "CG"	
			4	D-313	10	½"				150#	B16.21	COMPRESSED ASBESTOS	D-1170 GRADE PHILA	RING-⅛" THK	
507924				D-314	4	1"				300#					
SUPPLY			1	D-315	1	1½"				150°					
			1	D-316	1	1½"				150°					
			1	D-317	1	2½"								FULL FACE-⅛" THK	
			2	D-318	4	¾"	50#	212°		600#	COMM'L	STN ST'L	COMM'L	SPIRAL WOUND-FLEXITALLIC STYLE "CG"	
507924	507924A		1	D-320	6	¾"	1060	955°	1590	1500#	COMM'L	STAINLESS STL	COMM'L	SPIRAL WOUND-FLEXITALLIC STYLE "CG"	H.P. TURBINE STEAM CHEST THROTTLE VALVE TO A
			1	D-321	10	1"									
507924-B			2	D-322	1	1"	1060	955°	1590	600#				LARGE MALE SPIRAL WOUND-FLEXITALLIC STYLE "R-1"	
			2	D-323	2	1"	1060	955°	1590	600#					
507924-C			4	D-324	2	3"	50#	212°	SERV.	300#	B16.21	COMPRESSED ASBESTOS	D-1170 GRADE PHILA	RING ⅛" THK	MN. FEED PUMPS
			4	D-325	1	2"				300#	B16.21				PORT FD PUMP R
507924-D			5	D-326	1	1½"	29#	85°	SERV.	150#	B16.21	CLOTH INSERTED SBR RUBBER	D2000 GR AA 605	FULL FACE ⅛" THK	

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT 13	UNIT	UNIT 15	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
		128	128																					
		104	104		40									8										
							12							4										
						8								16										
	8																							
														12										
28	12																							
	28				4		16																	
	80				32							24		12										
						24						24												
							8					16												
					8																			
						16																		
					1																			
														24										
														32										

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO.	BOLTING IDENT NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	NUTS HEAVY HEX (2) PER STUD MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD
STUDS/BOLTS	NUTS																				
507929	507929-A			D-401	4	A193 SYM B16	⅞"	4¾"	B1.1 UNC-2A	A194 SYM 3	⅞"	B18.2.2 B1.1 UNC-2B	1500#	955°							
	(1) [illegible]	[illegible]	1,5	D-402	256		¾"	4¼"	B18.2.1		¾"										
	[illegible]		2,4	D-403	256		¾"	4"			¾"										
	507929			D-404	20	A193 GR. B7	⅝"	3½"		A194 SYM 2H	⅝"		600#	212°							
				D-405	44		⅝"	3"			⅝		300#								
				D-406	44		½"	3			½"		600#								
				D-407	56		½"	2½"			½"		300#								
SUPPLY	507930-A		3	D-408	40								150#		A307 GR B HEAVY HEX HEAD CARBON STL MACHINED	⅝"	3¼"	B18.2.1 B1.1 UNC-2A	A307 GR B HEAVY HEX HEAD CARBON STL MACHINED SEMI-FINISHED	⅝"	B18.2.2 B1.1 UNC-2B
507930		SUPPLY	2	D-409	48											⅝"	3"			⅝"	
				D-410	8											⅝"	2¾"			⅝"	
		507930-B&C	1,2,4	D-411	148											½"	2¼"			½"	
SUPPLY			2,4	D-412	48											½"	2"			½"	
507930		SUPPLY 507930-C	2,4	D-413	24											½"	1¾"			½"	
507929-D			2	D-414	16	A193 GR B7	⅝"	3¼"	B1.1 UNC-2A B18.2.1	A194 SYM 2H	⅝"	B18.2.2 B1.1 UNC-2B	866	550							
507929-G			4	D-415	16		¾"	4"		A194 SYM 2H	¾"										
SUPPLY			5	D-416	8										A307 GR B HVY HEX HD CARB. STL BLK. MACHINED	½"	1¾"	B18.2.1 B1.1 UNC-2A	A307 GR B HVY HEX HD CARB. STL BLK. MACH. SEMI-FIN	½"	B18.2.2 B1.1 UNC-2B
STUDS	STUDS	NUTS																			
507929-D		507929-E	2	D-423	8	A193 SYM B16	⅞"	4½"	B18.2.1 B1.1 UNC 2A	A194 SYM 3	⅞"	B18.2.2 B1.1 UNC-2B	1500#	955°							
507929	507929-B	507929-A 507929-C	1	D-420	24	A193 SYM B16	¾"	4¼"	B18.2.1 B1.1 UNC 2A	A194 SYM 3	¾"	B18.2.2 B1.1 UNC-2B	1500#	956°							
			1	D421	32		⅞"	4¾"			⅞"										
507929-D		507929-E	2	D-422	4		⅝"	3¼"			⅝"		600#	825°							

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-03-3

FRAME 1 OF 4

LIST OF FITTINGS

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
SUPPLY		3	D-500	8	2½"			40	.203	B16.9	SEAMLESS STL.	A234 GR. WPB	ELBOW-WELDING 90° L.R.		NOTES 90-93	TUBE TURN PT. #1
		2,4	D-501	9	3"				.216							#1
			D-502	2	2½×2				.203 .154				REDUCING L.R.			#12
			D-503	2	2½×1½				.203 .145				REDUCER WELDING CONCENTRIC			#90
			D-504	1	2½×1¼				.203 .140							#90
507902-E		6	D-505	2	2½×2½×2				.203 .154				TEE WELDING REDUCING			#28
		3,6	D-506	7	2½"				.203				TEE WELDING			#20
SUPPLY		5,6	D-507	14	2"			150#	—	B16.3	MALLEABLE IRON	A-197	SCR'D 90° ELBOW		175,90-93	FLAGG FIG. 1001
		3	D-508	11	1½"											
			D-509	5	1¼"											
		6	D-510	22	1"											
		3,4,5	D-511	50	¾"											
			D-512	42	½"											
		3,5	D-513	7	1"								TEE			
		2,4,5	D-514	25	¾"											1021
			D-515	7	½"											
			D-516	5	2×2×1								TEE REDUCING			
			D-517	4	2×2×¾											
			D-518	1	2×2×½											
			D-519	3	2×1½×2											
			D-520	1	2×1×1											
			D-521	2	2×1½×1½											
			D-522	1	2×2×1½											
			D-523	2	2×¾×¾											
			D-524	1	1½×¾×1½											
			D-525	1	1½×½×1½											
			D-526	3	1×¾×¾											
			D-527	1	1×1×¾											
			D-528	1	¾×¾×½											
			D-529	5	¾×½×½											
SUPPLY			D-530	1	1"×¾"								REDUCING COUPLING			1040
			D-531	2	¾"×½"								OUTSIDE HEX BUSHING ¾×½" MALE FEMALE			2071
			D-532	1	½"								PIPE CAP			1045
SUPPLY SUPPLY		3,6	D-533	25	2"			300#		—			UNION			1741
		3	D-534	26	1½"					—						
		3	D-535	4	1¼"					—						
		4	D-536	23	1"					—						
		3,4	D-537	50	¾"					—						
		4	D-538	39	½"					—						
			D-539	2	¼"			150#		—						
SUPPLY			D-540	6	2"			40		—	STEEL	A53 TY. F GR. B	NIPPLE - 3" LONG - THD. BOTH ENDS			
			D-541	4	¾"			40		—			NIPPLE - 2" LONG - THD. BOTH ENDS			
		2	D-542	1	3×½			3000#		—	FORGED STEEL	A105	SOCKOLET		NOTES 172,90-93	BONNEY FORGE
		2	D-543	2	½"			600#		—	CAST STL	A-216 GR. WCB	STRAINER "Y" TYPE SCRD MONEL SCREENS W/.033 PERF.		165,175,90-93	MUELLER 861BC
			D-544	1	1"			150#		B16.3	MALL. IRON	A197	45° Y-BRANCH SCR'D		175,90-93	FLAGG. FIG. 1038
			D-545	1	½"			150#		—	STN. STL.	A276 TY. 316	TRAP SCRD		175,182,90-93	SARCO TD 50
		2,4	D-546	10	½×¾			300#		B16.14	MALLABLE IRON	A-197	BUSHING SCR'D		175,90-93	FLAGG FIG. 2071
			D-547	1	¾"			600#		—	CAST STL	A-216 GR. WCB	STRAINER S.W. MONEL SCREENS W/.033 PERF.		165,90-93	MUELLER 862BC
			D-548	2	¾"			600#		—	FGD. CH-MO STL.	A182 GR. F-11	IMPULSE TRAP S.W.		187,90-93	YARWAY NO. 40D
		4	D-549	7	½"			1500#		—						515
		4	D-550	7	½"			1500#		—		A-217 GR. WCB	STRAINER MONEL SCREENS W/.033 PERF.		90-93	863
			D-551	3	½"			600#		—	CAST STL	A-216 GR. WCB			165,90-93	921SW
			D-552	1	½"			600#		—	FORGED STL	A105	STRAINER TRAP S.W.		187,90-93	461
			D-553	2	½"			300#		—	CAST STL.	A216 GR. WCB	THERMOSTATIC STM TRAP SCR'D			SARCO NO 9-306
			D-554	30	½"			3000#		B16.11	FORGED STL.	A234	SOCKET WELD-90° ELBOW		90-93	BONNEY FORGE
		2,4	D-555	5	1"								90°			
			D-556	2	½"								45°			
			D-557	8	½"						FGD. CH-MO STL.	A182 GR. F-11	90°			
507903-F		1,6	D-558	9	¾"								90°			
			D-559	8	½"								TEE			
		2,4,5	D-560	17	¾"											
			D-561	15	½"						FORGED STL	A234				
			D-562	3	1×1×½								REDUCING			
			D-563	1	1×¾×1											
			D-564	1	1¼×1								REDUCING COUPLING			
			D-565	2	¾×½								INSERT			
			D-566	1	2½×½			3000#		—		A105	ELBOLET		175,90-93	
			D-567	1	1¼×½			3000#		—			COUPLET		NOTES 90-93	VOGT D1160
		2,4,5	D-568	17	2½×¾					—		A105	THREADOLET RUN & OUTLET I.P.S.		175,90-93	BONNEY FORGE
		4,5	D-569	2	2"×1"					—						
SUPPLY			D-570	3	¾"					B16.11		A234	SCRD. COUPLING			
507903			D-571	2	½"					—		A105	UNION			
			D-572	1	¾"					B16.14			PLUG		90-93	
		2,4	D-573	12	¾"	—	—	—	—	—	STEEL	A415 COMM'L	FUNNEL SCR'D			EF 355A TY. #6
			D-574	2	1"	—	—	—	—	—						8
			D-575	1	½"	—	—	—	—	—						24
		1	D-576	1	1"	1060	955	1500#	—	—	STAIN. STL.	A240 GR. 316	ORIFICE PLATE FOR 1" PIPE, .115 DIA. HOLE, TYPE A, ⅛ THK.			BETH. STD. BS-2-UF
		1	D-577	1	1"			300#	—	—			1" .218			
		1	D-578	1	1¼"			150#	—	—			1¼ .355			
		1	D-579	1	1"			150#	—	—			1" .250			
		1	D-580	2	¾"			150#	—	—			¾ .115			
		1	D-581	1	1"			300#	—	—			1" .115			
507902-A		1	D-582	1	3"×2"			40	.216/.154	B16.9	SEAMLESS STL.	A234 GR. WPB	REDUCER WELDING CONC.		NOTES - 90-93	TUBE TURN PT. # 80
507905-A		1	D-583	1	3"×1¼			3000#	-	-	FORGED STL.	A105	LATROLET - I.P.S. RUN & SCRD. OUTLET		90-93,173	BONNEY FORGE
		1	D-584	1	3"×½			3000#	-	-			THREADOLET - I.P.S. RUN & OUTLET		90-93,170	
SUPPLY		1	D-585	2	¾"			3000#		B16.11		A234	SOCKET WELD COUPLING			
		1	D-586	1	2½×½			3000#	-	—	FORGED STEEL	A-105	ELBOLET-SCRD. OUTLET		90-93,173	BONNEY FORGE
507903-A		1	D-587	1	2×1½×2			150#	-	B-16.3	MALLEABLE IRON	A-197	SCRD TEE REDUCING		90-93	FLAGG FIG NO. 1021
SUPPLY		2	D-588	1	2			150#					SCR'D PIPE CAP		NOTES 175 & 90-93	FLAGG FIG NO. 1045
		2	D-589	2	2"×½"			3000#		—	FORGED ST'L	A-105	THREDOLET - I.P.S. RUN & OUTLET			BONNEY FORGE
507903			D-590	1	¾"	1060	955°	3000#		B16.11	FG. CH-MO. STL.	A182 GR. F-11	SOCKET WELD-90° ELBOW	H.P. TURBINE STEAM CHEST, STRAINER (THROTTLE VALVE TO AUTOMATIC [illegible])	NOTES 90-93	BONNEY FORGE
507903-A		1,2	D-591	6	1"								-90°			
			D-592	1	1"								-45°			
			D-593	3	1"								TEE			
			D-594	1	1"×¾								INSERT			
		1	D-595	1	1"			1500#		—	STAINLESS STL.	A240-GR316	ORIFICE PLATE FOR 1" PIPE, .180 DIA. HOLE, TYPE "A", ⅛ THK.			BETH STD BS-2-UF.
507903-A 507903-C		1,4	D-596	10	¾×½			3000		B16.11	FG. CH.-MO. STL.	A-182, GR. F11	SOCKET WELD RED. INSERT		NOTES 90-93	BONNEY FORGE
		1,2,5	D-597	8	¾"			1500#		—	CAST CH-MO. ST'L	A-217, GR. WCB	STRAINER-Y-TYPE, S.W. STNS. STL. SCREEN W/.033 PERF.		174	YARWAY NO. 863
		1,2,5	D-598	8	¾"						FGD. CH-MO. ST'L	A-182, GR. F11	IMPULSE TRAP		174	515
507903-C		1,4	D-599	5	½×⅜			3000#		B16.11			RED. INSERT			BONNEY FORGE
		1	D-600	1	½"								OIL SENSING CHAMBER		VENDOR FURN.	BULL & ROBERTS DWG. D340-40
		1	D-601	1	3"			40#	.216	B16.9	SEAMLESS STL.	A234 GR. WPB	ELBOW WELDING 45° L.R.		NOTES 90-93	TUBE TURN PT. #5
		1,2	D-602	2	½"			400#		—	STAINLESS ST'L	A276	IMPULSE TRAP. SCREWED		187 &	YARWAY SERIES 60
		2	D-603	2	¾"			300#		—	CARBON ST'L	A105 GR. II	THERMOSTATIC TRAP SCREWED			151
507903-C		2,4	D-604	4	¾"			600#		—	CAST ST'L	A-216 GR. WCB	STRAINER "Y" TYPE SCRD MONEL SCREENS W/.033 PERF.		165 & 175 &	MUELLER 861 BC
		2	D-605	1	¾×½×¾			150#		B16.3	MALLEABLE IRON	A-197	SCR'D TEE REDUCING		175 &	FLAGG FIG. 1021
		2	D-606	4	½"			3000#		B16.11	FGD. CR-MO ST'L	A-182 GR. F-11	S.W. 90° ELBOW			BONNEY FORGE
		2,3	~~D-607~~	~~1~~	~~½"~~						~~STEEL~~	~~A415 COMM'L~~	~~FUNNEL SCR'D W/COVER~~			~~EF355A TY.# [illegible]~~
		2	D-608	1	1½"						STEEL	A415 COMM'L	FUNNEL SCR'D			EF355A TY.# 10
		2	D-609	1	1½×½×1½			150#		B16.3	MALL. IRON	A-197	SCR'D TEE REDUCING.		175 &	FLAGG FIG. 1021

UAO-50147

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L.

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4-20-77 6-2-77		1. ADDED D-576 THRU D-581 2. INCR. D-562 FROM 2 TO 3 & D-591 FROM 1 TO 3 3. REMOVED RESERV. FROM D-595 4. ADDED Pc's D-582, D-583, D-585 5. ADDED D-596, D-597, D-598 & D-599 6. ADDED D-586 & D-587 7. REMOVED RESERV. FROM D-573, D-574, & D-575	G.L.W. R.L. D.L.B. DCC	G.G. SHARP LTR DATED 7-18-77
2	10-4-77		1- INCR. QTY OF: D-501(2-5), D-514(8-16), D-515(1-7), D-543(1-2), D-546(1-2), D-555(2-4), D-558(2-8), D-560(2-14), D-568(4-10), D-573(6-9), D-591(3-6), D-597(4-6), D-598(4-6) 2- CH'G'D THE DESCRIP'N FOR D-542 TO SOCKOLET IN LIEU OF WELDOLET 3- ADDED D-588 & D-589 & D-600 THRU D-625	PCG	10/5/77
3	11-25-77		1- ADDED D-626 & INCR. QTY OF: D-500 (5-8), D506 (3-6) D-508 (7-11), D-511 (37-39), D513 (1-4), D533 (16-22), D538 (13-26), D555 (2-4) & D537 (35-37) 2- DELETED D-607	PCC	12/5/77
4	1-30-78		1. REVISED THE QTY. FOR: D-501(5-9), D-511(37-48), D-514(16-21), D-536(22-23), D-537(37-50), D-538(37-39), D-546(2-10), D-549(4-7), D-550(5-7), D-555(4-5), D-560(4-15), D-568(10-17), D-569(1-2), D-573(9-12), D-596(4-10), D-597(2-5), D-604(2-4), D-612(1-2), D-618(1-2), D-620(2-4), D-623(1-2), D-626(1-4). 2. ADDED: D-627 THRU D-632.	RAM	2-2-78
5	6/29/78		1- INCR. QTY OF: D507 (8-10), D510 (13-22), D511 (48-50), D513 (4-7), D514 (21-25), D560 (15-17), D548 (14-17), D597 (6-8), D598 (6-8), D602 (1-2) & D610 (1-2) 2- ADDED ITEM NOS. D633 & D634 3- REVISED THE SIZE OF: D568 TO READ 2½"×¾" (WAS ¾") & D569 " 2"×1" (WAS 1")	PCG	7/5/78
6	10-4-78 12-5-78		1- ITEM D-626 DECR. FROM 4 TO 1, AND ITEM D-558 INCR. FROM 8 TO 9 PER Y.I.S. M-4650-22-283 2- TO COMPLY WITH Y.I.S. 4650-22-520, MATERIAL CHANGED AS FOLLOWS: ITEM D-505 INCR. FR. 1 TO 2; D-506 5 7; D-507 10 14; D-533 22 25	P.G.	12/12/78

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE DATE
DRAWN WF APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. M4650-372-03-3 ALT. NO. 6

FITTING LIST FOR STEAM & FRESH WATER DRAINS IN MACH'Y SPACE

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	10-3-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

M-726

DATE OF ISSUE

ALTERATION
ENGINEERING DISTRIBUTION
MAIL: OWNERS; AMERICAN BUREAU; LLOYD'S R.S.; U.S.M.A.; U.S. NAVY; U.S.C.G.; JOINER CONT'R.
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OFFICE: HULL DRAFT - 21; MACH. DRAFT - 22; ELEC. DRAFT - 23; OUTFIT DRAFT - 25; ESTIMATING; J. DOUGHERTY (CTD)
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OTHER: MOLD LOFT - 41; BRACKET SHOP
TOTAL YARD DIST.

4650-51 ALT. 1
4650-51 ALT. 2
4650-51 ALT. 3
4650-51 ALT. 4
4650-51 ALT. 5
4650-51 ALT. 6

M4650-372-03-3

TINGS

DESC	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG OR FIG. NO. OR EQUAL
		NOTES 90-93	BONNEY FORGE
		VENDOR FURNISHED	YARWAY SERIES 440
		NOTES 135, 187 & 90-93	SARCO TD-50
		90-93	BONNEY FORGE
			FLAGG FIG. 1021
		(135	MUELLER #861
			EF-490 FIG NO 2
			BONNEY FORGE
	ATMOS. DRAIN TK. OIL DETECTION SYS.		BULL & ROBERTS DWG. 01441
FFING BOX (9'-26)			BETH STD EF-365
C WELDING	FD PUMPS REL. VAL. DISCH.	NOTES 90-93	TUBE TURN PT #20
RD 45° E	PORT FD PUMP	90-93 & 135	FLAGG FIG 1002
PE SLEEVE			BETH STD. EF-490 FIG #1
PE SLEEVE			
		NOTES 90-93	FLAGG FLOW 5063
			FLAGG FIG #1021

LIST

PIPING PACKAGE UNIT APPLICATION: UNIT #1 – UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 6	UNIT 7	UNIT 8	UNIT 13	UNIT 15	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL
4	4								SUPPLY				3	D-500	8	2½"			40	.203	B16.9	SEAMLESS STL
	4			1	4								2,4	D-501	9	3"				.216		
									507902					D-502	2	2½"x2				[illegible]		
	2													D-503	2	2½"x1½				[illegible]		
	1													D-504	1	2½x1¼				[illegible]		
	1										507902-E		6	D-505	2	2½"x2½"x2"				[illegible]		
1	6									507902-C			3,6	D-506	7	2½"				.203		
	9		2		3				SUPPLY		SUPPLY		5,6	D-507	14	2"			150#	—	B16.3	MALLEABLE IRON
1	10												3	D-508	11	1½"						
	5													D-509	5	1¼"						
	8	1	1		9			3					6	D-510	22	1"						
	10	17	18	2			3						3,4,5	D-511	50	¾"						
4	12	5	5	2										D-512	42	½"						
	3				3			1					3,5	D-513	7	1"						
	7	5	5	2		4	2						2,4,5	D-514	25	¾"						
1	3	2	1										2	D-515	7	½						
									507903					D-516	5	2"x2"x1"						
														D-517	4	2"x2"x¾"						
														D-518	1	2"x2"x½"						
														D-519	3	2"x1½"x2"						
														D-520	1	2"x1"x1"						
1														D-521	2	2"x1½"x1½						
														D-522	1	2"x2"x1½						
														D-523	2	2"x¾"x¾"						
														D-524	1	1½"x¾"x1¼						
														D-525	1	1¼"x¾"x1¼						
														D-526	3	1"x¾"x¾						
														D-527	1	1"x1"x¾						
														D-528	1	½"x¾"x½						
														D-529	5	¾"x½"x½"						
									SUPPLY					D-530	1	1"x¾"						
														D-531	2	¾"x½"						
														D-532	1	¾"						
	23		2						SUPPLY		SUPPLY		3,6	D-533	25	2"			300#		—	
3	20						3						3	D-534	26	1½"					—	
	4												3	D-535	4	1¼"					—	
	18	1	1					3					4	D-536	23	1"					—	
1	8	11	11	13			6						3,4	D-537	50	¾"					—	
	12	4	2				21						4	D-538	39	½"					—	
														D-539	2	¼"			150#		—	
									SUPPLY					D-540	6	2"			40		—	STEEL
														D-541	4	¾"			40		—	
						1			507905-C				2	D-542	1	B3x½"			3000#		—	FORGED STEEL
	1					1			507908	507908-B			2	D-543	2	½"			600#		—	CAST STL
									507903					D-544	1	1"			150#		B16.3	MALL. IRON
									507910					D-545	1	½"			150#		—	STN. STL.
		2	2	2					507903	SUPPLY			2,4	D-546	10	½"x¾"			300#		B16.14	MALLEABLE IRON
									507908					D-547	1	¾"			600#		—	CAST STL
									507910					D-548	2	¾"			600#		—	FGD. CH-MO STL.
		3	1	1						507910-D			4	D-549	7	½"			1500#		—	
		3	1	1					507908	507908-C			4	D-550	7	½"			1500#		—	
														D-551	3	½"			600#		—	CAST STL
									507910					D-552	1	½"			600#		—	FORGED STL
						1								D-553	2	½"			300#		—	CAST STL
		2			3	5		6	SUPPLY					D-554	30	½"			3000#		B16.11	FORGED STL.
			1			3	1						2,4	D-555	5	1"						
														D-556	2	½"						
		1	1						507903					D-557	8	½"						FGD CH-MO STL
		4	3					2		507903-B	507903-F		2,6	D-558	9	¾"						
		1	1	1										D-559	8	½"						
		9	7	1						507903-B	507903-C	507903-E	2,4,5	D-560	17	¾"						
						2		2	SUPPLY					D-561	15	1½"						FORGED STL
								3	507903	507903-A				D-562	3	1"x1"x½"						
														D-563	1	¾"x½"x1"						
								1						D-564	1	1¼"x1"						
														D-565	2	¾"x½"						
									507905					D-566	1	2½"x½"			3000#		—	
														D-567	1	1¼"x½"			3000#		—	
1	1	6	9						507905-D	507905-E			2,4,5	D-568	17	2½"x¾"					—	
		1	1										4,5	D-569	2	2"x1"					—	
									SUPPLY					D-570	3	¾"					B16.11	
									507903					D-571	2	½"					—	
														D-572	1	¾"					B16.14	
	1	5	5	1					UAO				2,4	D-573	12	¾"	—	—	—	—	—	STEEL
1														D-574	2	1"	—	—	—	—	—	
1														D-575	1	5"	—	—	—	—	—	
								1					1	D-576	1	1"	1060	955	1500#	—	—	STAIN. STL.
								1					1	D-577	1	1"			300#	—	—	
								1					1	D-578	1	1¼"			150#	—	—	
								1					1	D-579	1	1"			150#	—	—	
								2					1	D-580	2	¾"			150#	—	—	
								1					1	D-581	1	1"			300#	—	—	
				1					507902-A				1	D-582	1	3"x2"			40	.216/.154	B16.9	SEAMLESS ST'L
				1					507905-A				1	D-583	1	3"x1½"			3000#	-	-	FORGED ST'L
				1									1	D-584	1	3"x½"			3000#	-	-	
				2					SUPPLY				1	D-585	2	¾"			3000#		B16.11	
1									507905-B				1	D-586	1	2½"x½"			3000#	-	-	FORGED STEEL
1									507903-A				1	D-587	1	2½x1½x2			150#	-	B-16.3	MALLEABLE IRON
			1						SUPPLY				2	D-588	1	2			150#			
		2							507905-C				2	D-589	2	2"x½"			3000#		—	FORGED ST'L
								1	507903					D-590	1	¾"	1060	955°	3000#		B16.11	FG. CH-MO. STL.
								6		507903-A	507903-B		1,2	D-591	6	1"						
								1						D-592	1	1"						
								2						D-593	3	1"						
								1						D-594	1	1"x¾"						
								1	UAO					D-595	1	1"			1500#		—	STAINLESS ST'L
		2	2	2					507903-A	507903-C			1,4	D-596	10	¾"x½"			3000		B16.11	FG. CH. MO. ST'L
		4	4						507908-A	507908-B	507908-D		1,2,5	D-597	8	¾"			1500#		—	CAST CH-MO. ST'L
		4	4						507910-B	507910-C	507910-F		1,2,5	D-598	8	¾"						FGD. CH-MO. ST'L
		1	1	1					507903-A	507903-C			4	D-599	5	½"x⅜"			3000#		B16.11	
1									500076				2	D-600	1	½"						
	1								507902-B				2	D-601	1	5"			40#	.216	B16.9	SEAMLESS ST'L
	1								507910-C	507910-F			2,5	D-602	2	½"			400#		—	STAINLESS ST'L
	2								507910-C				2	D-603	2	¾"			300#		—	CARBON ST'L
	2			1			1		507908-B	507908-C			2,4	D-604	4	[illegible]			600#		—	CAST ST'L
	1								507903-B				2	D-605	1	[illegible]			150#		B16.3	MALLEABLE IRON
	4								507903-B				2	D-606	4	½"			3000#		B16.11	FGD. CR-MO ST'L
									[illegible]				2,3	D-607	1	½"						STEEL
	1								[illegible]				2	D-608	1	1¼"						STEEL
	1								507903-B				2	D-609	1	[illegible]			150#		B16.3	MALL. IRON

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BUILDERS PLAN NO. M4650-372-03-3

FRAME 2 OF 4

PACKAGE

PLICATION

UNIT #9 · UNIT #10 · UNIT #13 · UNIT #14 · UNIT #15 · UNIT #16 · UNIT #17 · UNIT #18 · UNIT #19 · UNIT #20

LIST OF FITTINGS

STRUCTURAL MODULAR UNIT APPLICATION

FITTING IDENT. NO.	UNIT 1	UNIT	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT 13	UNIT	UNIT 15
D-610								2							
D-611								1							
D-612			1	1		3		1					4		
D-613								2							
D-614								3							
D-615								1							
D-616								1							
D-617													1		
D-618						1							1		
D-619													1		
D-620						2							2		
D-621													2		
D-622													1		
D-623						1							1		
D-624													2		
D-625													1		
D-626	1														
D-627													3		
D-628							1								
D-629							1								
D-630	5														
D-631						2									
D-632						1									
D-633						1									
D-634						1									

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
507903-A	507903-E			2,5	D-610	2	2"			3000#		B16.11	FORGED ST'L	A-234	S.W. TEE		NOTES 90-93	BONNEY FORGE
507903-B				2	D-611	1	2"			↓		↓	↓	↓	90° ELBOW		↓	↓
507903-B	507903-C			2,4	D-612	10	¾"			↓		↓	↓	↓	↓		↓	↓
SUPPLY				2	D-613	2	2"x¾"			↓		↓	↓	↓	REDUCING INSERT		↓	↓
507903-B				2	D-614	3	¾"			↓		—	↓	A105	UNION		↓	↓
507903-B				2	D-615	1	½"			↓		—	↓	↓	↓		↓	↓
500001				2	D-616	1	¾"								TRAP & STRAINER		VENDOR FURNISHED	YARWAY SERIES 460 [illegible]
507910-C				2	D-617	1	1"			600#		—	STN ST'L	A276 TY 316	THERMOSTATIC STM TRAP SCRD		NOTES 175, 181 & 90-93	SARCO TD 50
507910-C	507910-D			2,4	D-618	2	¾"			↓		—	↓	↓	↓ SCRD		↓	↓
507903-B				2	D-619	1	1"			3000#		B16.11	FORG. ST'L	A-234	TEE S.W.		90-93	BONNEY FORGE
507903-A	507903-C			2,4	D-620	4	¾"			↓		↓	↓	↓	↓		↓	↓
SUPPLY				2	D-621	2	1½"			150#		B16.3	MALL. IRON	A-197	SCR'D		↓	FLAGG FIG. 1021
507904-B				2	D-622	1	1"			600#		—	CAST ST'L	A-216 GR WCB	Y-STRAINER SCR'D MONEL SCREEN W/.033" PERF.		& 175	MUELLER #861
UAO				2,4	D-623	2	¾"			[illegible]	[illegible]	—	STEEL	A53 TY. E OR S GR. B	BHD SLEEVE		↓	EF-496 FIG NO. 2
507903-B				2	D-624	2	1½"x1"			3000#		B16.11	FORG. ST'L	A-234	BUSHING		↓	BONNEY FORGE
507903-B				2	D-625	1	1½"x¾"			↓		↓	↓	↓	↓		↓	↓
500076				3,4,6	D-626	1	½"			–		–		–	SAMPLE FLOW INDICATOR	ATMOS. DRAIN TK. OIL DETECTION SYS.	↓	BULL & ROBERTS DWG. 01441
UAO				4	D-627	3	¾"			—	—	—	STEEL	A53 TY. E OR S GRADE B	STUFFING BOX FOR PIPE (9" LG)			BETH STD EF-365
507902-D				4	D-628	1	3"			40	.216	B16.9	SEAMLESS STL.	A234 GR WPB	TEE WELDING	FD. PUMPS REL. VAL. DISCH.	NOTES 90-93	TUBE TURN PT #20
SUPPLY				4	D-629	1	2"			150#		B16.3	MALL. IRON	A197	SCRD 45° ELBOW	PORT FD PUMP ↓ ↓ ↓	↓ 90-93 & 175	FLAGG FIG 1002
UAO				4	D-630	5	2½"			—	—	—	STEEL	A53 TY. E OR S GR. B	PIPE SLEEVE			BETH. STD. EF-496 FIG #1
↓				4	D-631	15	3"			—	—	—	STEEL	A 519 GR. 1018 [illegible]	PIPE SLEEVE			↓
↓				4	D-632	5	2"			—	—	—	↓	A53 TY. E OR S GR. B	↓			↓
507903-E				5	D-633	1	1½"			200#		—	BRONZE	B61	ADAPTER FEM THR'D X MALE FF		NOTES 90-93	FLAGG FLOW 5063
↓				5	D-634	1	1½x¾x1½			150#		B16.3	MALL. IRON	A-197	REDUCING TEE, SCR'D		↓ ↓	FLAGG FIG #1021

UNIT #1 · UNIT #2 · UNIT #3

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FRAME 3 OF 4

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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BUILDERS PLAN NO. M4650-372-03-3

FRAME 4 OF 4

LIST OF FITTINGS

FITTING IDENT. NO.	PIPING PACKAGE UNIT APPLICATION																				STRUCTURAL MODULAR UNIT APPLICATION																								
	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20	UNIT 1	UNIT	UNIT 3	UNIT 4	UNIT	UNIT 6	UNIT 7	UNIT 8	UNIT	UNIT	UNIT	UNIT	UNIT 13	UNIT	UNIT 15	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
D-610																												2																	
D-611																												1																	
D-612																							1	1		3		1					4												
D-613																												2																	
D-614																												3																	
D-615																												1																	
D-616																												1																	
D-617																																	1												
D-618																										1							1												
D-619																																	1												
D-620																										2							2												
D-621																																	2												
D-622																																	1												
D-623																										1							1												
D-624																																	2												
D-625																																	1												
D-626																					1																								
D-627																																	3												
D-628																											1																		
D-629																											1																		
D-630																					5																								
D-631																										2																			
D-632																										1																			
D-633																										1																			
D-634																										1																			

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA		SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	
								P.S.I.	°F							
507903-A	507903-E			2,5	D-610	2	2"			3000#		B16.11	FORGED ST'L	A-234	S.W. TEE	
507903-B				2	D-611	1	2"								90° ELBOW	
507903-B	507903-C			2,4	D-612	10	¾"								↓	
SUPPLY				2	D-613	2	2"x¾"					↓			REDUCING INSERT	
507903-B				2	D-614	5	¾"					—		A105	UNION	
507903-B				2	D-615	1	½"			↓		—	↓	↓	↓	
500001				2	D-616	1	¾"								TRAP & STRAINER	
507910-C				2	D-617	1	1"			600#		—	STN ST'L	A276 TY. 316	THERMOSTATIC STM TRAP SCR'D	
507910-C	507910-D			2,4	D-618	2	¾"			↓		—	↓	↓	↓ SCR'D	
507903-B				2	D-619	1	1"			3000#		B16.11	FORG. ST'L	A-234	TEE S.W.	
507903-B	507903-C			2,4	D-620	4	¾"			↓		↓	↓	↓	↓	
SUPPLY				2	D-621	2	1½"			150#		B16.3	MALL. IRON	A-197	SCR'D	
507908-B				2	D-622	1	1"			600#		—	CAST ST'L	A-216 GR. WCB	Y-STRAINER SCR'D MONEL SCREEN W/.033 PERF.	
UAO				2,4	D-623	2	¾"			—		—	STEEL	A53 TY. E OR S GR. B	BHD SLEEVE	
507903-B				2	D-624	2	1½"x1"			3000#		B16.11	FORG. ST'L	A-234	BUSHING	
507903-B				2	D-625	1	1½"x¾"			↓		↓	↓	↓	↓	
500076				3,4,6	D-626	1	½"			—		—	—	—	SAMPLE FLOW INDICATOR	ATMOS. DRAIN
UAO				4	D-627	3	¾"			—	—	—	STEEL	A53 TY. E OR S GRADE B	STUFFING BOX FOR PIPE (9"LG)	
507902-D				4	D-628	1	3"			40	.216	B16.9	SEAMLESS STL.	A234 GR WPB	TEE WELDING	FD. PUMPS
SUPPLY				4	D-629	1	2"			150#		B16.3	MALL. IRON	A197	SCRD 45° ELBOW	PORT FD PUM
UAO				4	D-630	5	2½"			—	—	—	STEEL	A53 TY. E OR S GR. B	PIPE SLEEVE	
				4	D-631	15	3"			—	—	—	STEEL	A 519 GR. 1018 H.R.	PIPE SLEEVE	
↓				4	D-632	5	2"			—	—	—	↓	A53 TY. E OR S GR. B	↓	
507903-E				5	D-633	1	1½"			200#		—	BRONZE	B61	ADAPTER FEM THR'D X MALE FF	
↓				5	D-634	1	1½x¾x¾			150#		B16.3	MALL. IRON	A-197	REDUCING TEE, SCR'D	

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BUILDERS PLAN NO. M4650-372-11-1

NOV 1980 10X

FRAME 1 OF 3

LIST OF PIPES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	GALV.	TOTAL	SIZE	SCH NO.	WALL THK.	DESIGN CRITERIA P.S.I.	°F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
		1	AW-1	5'-0"		5'-0"	10"	40	0.365	76	284	B36.10	SEAMLESS CARBON STEEL	A53 T.S GR.B	LOW PRESSURE FEED	II	90#	NOS. 128,135 & 136
			AW-2	80'-0"		80'-0"	8"		0.322									
		3	AW-3	90'-0"		90'-0"	6"		0.280									
			AW-4	180'-0"		180'-0"	5"		0.258									
			AW-5	180'-0"		180'-0"	4"		0.237									
		2	AW-6	40'-0"		40'-0"	3½"	80	0.318				WELDED CARBON STEEL	A53 T.E GR.B				
		4,6,7	AW-7	303'-0"		303'-0"	3"	40	0.216									
		4,7	AW-8	290'-0"		290'-0"	2½"		0.203									
		9	AW-9	160'-0"		160'-0"	2"		0.154									
		1,3,5	AW-10	281'-0"		281'-0"	1½"		0.145									
			AW-11	130'-0"		130'-0"	1"		0.133									
		1,3,4,11	AW-12	125'-0"		125'-0"	¾"		0.113									
			AW-13	150'-0"		150'-0"	½"		0.109									
			AW-14	20'-0"		20'-0"	⅜"		0.091									
			AW-15	70'-0"		70'-0"	¼"		0.088									
		1,2	AW-16	30'-0"		30'-0"	4"	80	0.337									
		1,2	AW-17	10'-0"		10'-0"	2½"		0.276									
		1,2	AW-18	35'-0"		35'-0"	2"		0.218									
		3	AW-19	20'-0"		20'-0"	1¼"	40	0.140									
		8	AW-20	2'-0"		2'-0"	6"	160	0.864				SEAMLESS	A106 GR.B				
		1	W-1	160'-0"		160'-0"	6"	80	0.432	1325	450	B36.10	SEAMLESS CARBON STEEL	A106 GR.B	HIGH PRESSURE FEED	I	1988	NOS. 128,135 & 136
			W-2	60'-0"		60'-0"	4"		0.337									
			W-3	20'-0"		20'-0"	3"	160	0.438									
			W-4	10'-0"		10'-0"	2½"		0.375									
			W-5	10'-0"		10'-0"	2"		0.343									
		1,11	W-6	260'-0"		260'-0"	1½"		0.281									
			W-7	30'-0"		30'-0"	1¼"		0.250									
		1,5,7	W-8	80'-0"		80'-0"	1"	80	0.179						& BOILER BLOW PIPING			
			W-9	50'-0"		50'-0"	¾"		0.154									

LIST OF VALVES

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	°F	PRESS STD.	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	DISC	STEM	PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. SEE NOTE NO. 4
			AW-100	2	10"	76	187	150#	B16.10	CAST STEEL	A216 GR.WCB	BRONZE	BRONZE	BRONZE	—	FLG'D F&D	B16.5	GATE	NOS. 2,6,90-93	LUNK'NH'M'R FIG. 1502
			AW-101	3	8"	66	284								—				2,6,90-93	
			AW-102	7	5"	66	284								—				2,6,90-93	
			AW-103	3	4"	66	284								—				2,6,90-93	
		5	AW-104	9	3"	76	187								—				2,6,90-93	
		4,5	AW-105	2	3"	76	187								—			(SEE GEN. NOTE #1)	2,6,14,95,90-93	
		7	AW-106	5	2½"	66	284								—				2,6,90-93	
			AW-107	1	2"	66	284								—			(SEE GEN. NOTE #1)	2,6,14,95,90-93	
		4	AW-108	2	1½"	76	187	200#	—	BRONZE	B-61				—	SCREWED	B2.1	GATE, R.S.	1,90-93	POWELL FIG. 375
			AW-109	1	2½"	66	284	150#	B16.10	CAST STEEL	A216 GR.WCB				—	FLG'D F&D	B16.5	GLOBE, STOP CHECK	6,90-93	LUNK'NH'M'R FIG. 1542-X
			AW-110	3	½"		212	200#	—	BRONZE	B-61				—	SCREWED	B2.1	GATE, R.S.	1,90-93	POWELL FIG. 375
			AW-111	2	3"	76	187	150#	B16.10	CAST STEEL	A-216 GR.WCB				—	FLG'D F&D	B16.5	GLOBE - ELECTRIC MOTOR OPER.	SEE NOTE 96	
			AW-112	6	2"	66	284	200#	—	BRONZE	B-61				—	SCREWED	B2.1	GLOBE	NOS. 1,90-93	POWELL FIG. 110
			AW-113	2	1½"	76	187		—						—				1,90-93	
		10	AW-114	7	1"	66	212		—						—				1,90-93	
		7	AW-115	24	¾"				—						—				1,90-93	
			AW-116	8	½"				—						—				1,90-93	
			AW-117	2	3"	76	187	150#	B16.10	CAST STEEL	A216 GR.WCB				—	FLG'D F&D	B16.5	GLOBE STOP-CHECK	6,90-93	LUNK'NH'M'R FIG. 1542-X
			AW-118	1	4"	66	284								—				6,90-93	1542-X
			AW-119	1	2"			200#	—	BRONZE	B-61				—	SCREWED	B2.1		1,90-93	407-C
			AW-120	2	1½"		212		—						—				1,90-93	407-C
		4,5	AW-121	1	3"			150#	B16.10	CAST STEEL	A216 GR.WCB					FLG'D F&D	B16.5	GLOBE	6,90-93	1542
		4,6	AW-122	1	1"				—									DIAPHRAGM CONTROL VALVE	SEE NOTE 96	
			AW-123	1	1½"				—											
			AW-124	1	1"				—											
		7	AW-125	1	1"			300#	—	CARBON STL								-DL-3		
			AW-126	1	1½"			150#	—									-DOS		LESLIE DWG NO. 101-4271-38
			AW-127	1	2"				—											
		1	AW-128	1	1"				—	BRONZE										
			AW-129	1	1"				—									-DL-3		LESLIE DWG NO. [illegible]
			AW-130	1	½"				—											
			AW-131	1	2"			200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GLOBE	NOS. 1,90-93	POWELL FIG. 110
			AW-132	1	½"				—						—			GATE- R.S.	1,90-93	375
			AW-133	2	½"	76	187		—						—			GLOBE, STOP CHECK	1,90-93	LUNK'NH'M'R FIG. 407-C
		6	AW-134	1	1½"				—						—	[illegible]	B21/B24	GLOBE+HOSE, W/CAP & CHAIN	1,38,90-93	POWELL FIG. 110-H
		4	AW-135	3	½"	66	284								—	SCREWED	B2.1	GLOBE	1,90-93	110
			AW-136	1	4"	66	284	150#	B16.10	CAST STEEL	A216 GR.WCB				—	FLGD. F&D	B16.5		6,90-93	LUNK'NH'M'R FIG. 1542
			AW-137	2	2½"										—			GATE	2,6,90-93	LUNKENHEIMER FIG 1502
		3	AW-138	1	1/4"	76	187	200#	—	BRONZE	B-61				—	SCREWED	B2.1	NEEDLE	1,90-93	POWELL FIG. 180
		3	AW-139	1	1½"	—	—	125#	—						—			3 WAY, 2 PORT PLUG COCK W/WRENCH	90-93	LUNKENHEIMER #1235
		3	AW-140	2	3"			150#	B16.10	CAST STEEL	A-216 GR.WCB			—	MONEL	FLG'D F&D	B16.5	SWING CHECK	VENDOR FURN.	W/MN COND. VAC. PUMPS
		4	AW-141	1	4"													DIAPHRAGM CONTROL VALVE	NO. 96	
		4	AW-142	1	½"	125	289	200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	MONEL	SCREWED	B2.1	VERTICAL LIFT CHECK	90-93	POWELL FIG NO. 584
		4	W-100	5	6"	1313	430	900#	B16.10	CAST CHROME-MOLY	A217 GR.WC6	STNS. STL	STNS. STL	STNS. STL	—	FLG'D F&D	B16.5	GLOBE STOP-CHK. NON-CHATTERING	NOS. 2,4,7,8,9,35,90-93	EDWARD FIG. 4006
		1	W-101	5	6"										—			GLOBE	2,4,8,9,35,90-93	4016
			W-102	4	4"										—				2,4,8,9,35,90-93	4016
		3	W-103	3	4"										—			GLOBE STOP CHK - NON-CHATTERING	2,4,7,8,9,35,90-93	4006
		3	W-104	1	4"										—				2,4,7,8,9,35,90-93	4006
			W-105	1	3"										—				2,4,7,8,9,35,90-93	4006
			W-106	1	2½"	125	289	150#		CAST STL	A216 GR.WCB	BRONZE	BRONZE	BRONZE	—				6,90-93	LUNKENHEIMER FIG 1542-X
			W-107	6	2"	1313	552	1500#		FGD. CHROME-MOLY	A182-GR F11	STNS. STL	STNS. STL	STNS. STL	—			GLOBE	4,5,90-93	EDWARD FIG 1028
			W-108	1	1½"		480								—				4,5,90-93	1028
			W-109	6	½"										—	SCREWED	B2.1	GLOBE STOP-CHK	4,5,90-93	1068
		4	W-110	15	½"				—						—			GLOBE	4,5,90-93	1048
		4	W-111	1	½"										—			ANGLE VALVE	4,5,90-93	1049
			W-112	2	2"				—						—	FLG'D F&D	B16.5	CONTROL VALVE	VENDOR FURN.	
		4,10	W-113	2	½"		552		—	F&D CHROME-MOLY	A182-GR F11	STNS STL	STNS STL	STNS STL	—			W/ AIR ACTUATOR	NO. 96	EDWARD #3624-M[illegible]
		4	W-114	1	1½"		552								—			- RECIRCULATING	VENDOR FURN.	—
		4	W-115	2	½"		480								—			PILOT		FURN. W/ W-114
		4,5	W-116	1	2"				—	FGD. CHROME-MOLY	A182 GR F11	STNS STL	STNS STL	STNS STL	—			GLOBE	NOS. 4,5,90-93	EDWARD FIG. 1028
		4	W-117	2	½"		552		B16.10						—	FLGD F&D	B16.5	GLOBE STOP-CHK	4,5,90-93	1046
		4	W-118	2	½"		480								—			GLOBE	4,5,90-93	1028
		4	W-119	2	6"			900#		CAST CHROME-MOLY	A217 GR WC6				—				3,4,8,9,35,90-93	4016
		4,5	W-120	2	1¼"		480	1500#	—	FGD. CHROME-MOLY	A182 GR F11				—	FLG'D F&D	B16.5	GLOBE	4,5,90-93	1028
			W-121	2	1½"	125	289	200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—			[illegible]	1,90-93	[illegible]

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
10 CONT.	9/26/78		4- PROVIDED REQN. Nº FOR W-115 5- REVISED SIZE, QTY., & DESC. FOR W-133 & W-134 TO SUIT VENDOR INFO. & PROVIDED REQN. Nº & BRKDN. COLUMN.	JJR	10 27 78
11	2-2-79		1. AW-12 (¾") QTY 125' WAS 120' PER Y.I.S. 4650-22-347 2. W-6 (1½") QTY 260' WAS 200' TO REFLECT ADDED AMT TO UNIT #7	EJK	2 22 79

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	12-3-76		1. ADDED PIPE NOS. AW-1 THRU AW-15, W-1 THRU W-12 & W-15 THRU W-20 2. DELETED VALVE W-126 AND INCR. W-101 FROM 3 TO 5 & W-129 FROM 2 TO 4 (DES. DEV.)	GLW	G.G. SHARP LTR. DATED 5-18-77
2	1-13-77		1. RELEASED RES ON AW-6 2. REVISED QTY OF AW-16 (2'0" TO 30'0"), AW-17 (1'-0" TO 10'-0") AND AW-18 (25'0" TO 35'-0")	DLR	G.G. SHARP LTR. DATED 5-18-77
3	5-4-77		1. ADDED Pc. "AW-19, AW-138, AW-139. 2. REVISED QTY AW-3 (5'-0" TO 90'-0") 3. DELETED SPECIAL NOTE #8 FOR W-103 & W-104 AND ADDED NOTE #12. 4. REVISED QTY. OF AW-121 (WAS 3) 5. ADDED AW-140. 6. REVISED QTY OF AW-10 (WAS 60') & AW-12 (WAS 30').	RJL DLB Secq	G.G. SHARP LTR. DATED 8-1-77
4	8-24-77		1. DELETED VLV. Nos. W-111, W-117, W-118, W-119, W-121 & W-122, W-130 2. ADDED W-127 & W-128, AW-141 & AW-142 3. REVISED QTY LISTED BELOW: W-100 - 5 WAS 3 W-110 - 15 WAS 28 W-131 - 1 WAS 3 W-137 - 10 WAS 4 4. VALVES W-116, W-120, & W-132 - WAS SCR'D. NOW FLG'D. 5. W-131 WAS BRONZE NOW STL 6. REVISED QTY OF AW-7 (140' TO 216'), AW-12 (45' TO 120'); AW-105 (2 TO 3) AW-108 (1 TO 2) AW-122 (1 TO 2) AW-135 (2 TO 3) 7. CLARIFIED W-113 8. ADDED MANUFACTURER TO W-114	EJK	9/2/77
5	10-28 77		1- INCR. QTY OF AW-7 (215'-263'), AW-10 (131'-281'), AW-104 (8-9) & W-8 (40'-60'). 2- CHANGED SIZE OF W-116 (1½"-2") W-120 (1½"-1¼") 3- CHANGED THE DESCRIPTION OF AW-121 (SWING CHECK TO GLOBE) 4- QTY. AW-105 FROM 3 TO 2.	PCG	11/11/77
6	11-23 77		1- DECR. QTY. OF AW-122 (2-1) 2- REVISED VALVE AW-134: SIZE (½" TO 1½") INLET END TYPE (SCR'D TO FLG'D) SPEC'L NOTES (1,41,90-93 TO 1,38,90-93) 3- ADDED MANUFACTURE TO W-113 4- DELETED MANUFAC. FROM W-114	PCG	12/8/77
7	2-2-78		1. REVISED THE QTY. FOR: W-8 (60' TO 80'), W-20 (140' TO 200'), W-137 (10-11), AW-7 (263' TO 303'), AW-8 (240' TO 290'). 2. ADDED W-142, AS PER Y.I.S. 4650-22-26.	RHW	2-9-78
8	3-23-78		1. ADDED AW-20 2. REVISED PRESS. STD. OF W-123 FROM 1500# TO 600#	RHW	3-30-78
9	4-27-78		1. REVISED QTY. OF ITEMS: AW-9 FROM 280' TO 160' AW-115 49 24 AW-106 6 5 W-15 160' 80'	L.P.K.	5 8 78
10	9-27-78 9/26/78		1- ITEM AW-114 INCREASED FROM 6 TO 7 PER Y.I.S. M-4650-22-283 2. REVISED MATERIAL OF VALVE W-128 TO SUIT DIAGRAMS AND MATL. REQ'D. 3- REVISED DESC., VENDOR & REQN. Nº FOR W-113 (CONT'D.)	P.G. JJR	

GENERAL NOTES

1. GATE VALVES SUBJECT TO VACUUM OF MAIN CONDENSER SHALL HAVE PACKING GLAND SEALED WITH WATER FROM FROM CONDENSATE MAIN TO D.C. HEATER
2. DESIGNATIONS "LOCKED CLOSED" OR "LOCKED OPEN" ARE LISTED FOR YARD/TECHNICAL INFORMATION ONLY - NOT FOR ORDERING PURPOSES. LOCKS AND LOCATIONS ARE PROVIDED ON REF. #2.

REFERENCE PLANS

NO.	PLAN NO.	TITLE
2	M4650-372-2	ENGINEERS LOCK LIST
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE —
DATE SEP 3 1976
DRAWN E.J.K.
APPROVED
TRACED
APPROVED
CHECKED J.E.W.
APPROVED

PLAN NO. M-4650-372-11-1
ALT. NO. 11

PIPE & VALVE LIST FOR FEED, CONDENSATE, AIR EJECTOR & BOILER BLOW PIPING

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	9-19-77				
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

M-727

DATE OF ISSUE	
ALTERATION	[illegible]
ENGINEERING DISTRIBUTION	[illegible]
MAIL: OWNERS	[illegible]
AMERICAN BUREAU	[illegible]
LLOYD'S R.S.	[illegible]
U.S.M.A.	[illegible]
U.S. NAVY	[illegible]
U.S.C.G.	[illegible]
JOINER CONT'R.	[illegible]
INSPECTION: OWNER'S INSP.	[illegible]
AM. BU. INSP.	[illegible]
LLOYD'S INSP.	[illegible]
U.S.M.A. INSP.	[illegible]
U.S. NAVY INSP.	[illegible]
U.S.C.G. INSP.	[illegible]
OFFICE: HULL DRAFT - 21	[illegible]
MACH. DRAFT - 22	[illegible]
ELEC. DRAFT - 23	[illegible]
OUTFIT. DRAFT - 25	[illegible]
ESTIMATING	[illegible]
MISC.: PRODUCTION	[illegible]
ORDER DEPT.	[illegible]
JOINER CONT. YARD	[illegible]
TOTAL ENG'R. DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
YARD: PIECE RATE - 11	[illegible]
TEST DEPARTMENT	[illegible]
GROUND ASSEMBLY	[illegible]
STRUCTURAL: NO. WAY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
STRUCT. SUPER.	[illegible]
OPTICAL DETAIL	[illegible]
WET DOCK	[illegible]
MACH'Y & OUTFIT.: PIPE SHOP - 52	[illegible]
OUTFIT. #1 PIER	[illegible]
PIPE DRAFT - 52	[illegible]
BOILER SHOP - 56	[illegible]
OUTSIDE MACH. - 60	[illegible]
ELECTRIC SHOP - 70	[illegible]
SHEET MET. SHOP - 76	[illegible]
COPPER SHOP - 51	[illegible]
PAINT SHOP - 78	[illegible]
OTHER: MOLD LOFT - 41	[illegible]
BRACKET SHOP	[illegible]
TOTAL YARD DIST.	[illegible]

90 PT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-372-11-1

NOV 1980 10X

FRAME 2 OF 3

LIST OF PIPES

SIZE	SCH NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF #1
[illegible]	80	0.147	1325	450	B36.10	SEAMLESS CARBON STEEL	A106 GR B	HIGH PRESSURE FEED & BOILER BLOW	I	1988	NOS 128,135&136
[illegible]		[illegible]									
[illegible]	160	0.218	1313	552							
										1970	
3"	40	0.216	135	289	B36.10	SEAMLESS CARBON STEEL	A53 TY S GR B	BOILER AND CONDENSATE MIXING	II	188	NOS 128,135&136
2½"		0.203									
2"		0.154									
1½"		0.145									
1¼"		0.140									
½"		0.109									

LIST OF VALVES

DESIGN CRITERIA °F	PRESS STD	ANSI DIM STD	BODY MATERIAL	ASTM SPEC	TRIM SEAT	TRIM DISC	TRIM STEM	PIN WHERE REQ'D	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF #1	MANUFACTURER DWG. OR FIG. NO. SEE NOTE NO. 4
289	200#	—	BRONZE	B61	BRONZE	BRONZE	—	MONEL	SCREWED	B2.1	SWING CHK		
430	600#							—	FLG'D F&D	B16.5	GLOBE STOP CHK	NOS. 90-93	[illegible]
								—			ANGLE VALVE	NOS	VENDOR FURNISHED
	900#	B16.10	CAST CHROME-MOLY	A217 GR WC6	STNS STL	STNS STL	STNS STL	—			CONTROL VALVE-RECIRCULATING		
289	150#	B16.10	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	FLG'D F&D	B16.5	ANGLE VALVE		
								—	FLG'D (F.F.)	B16.5	GATE VALVE	NOS. 2,5,8,9,35,90-93	EDWARD FIG. 4017
289	200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—			SWING CHK	NOS. 1,90-93	POWELL FIG. 876
430	1500#	—	FGD CHROME-MOLY	A182 GR F11	STNS STL	STNS STL	STNS STL	—	SCREWED	B2.1	GLOBE	90-93	LUNKENHEIMER FIG. 596
430	3000#	—	STEEL	A106 GR 1214	STNS STL	STNS STL	STNS STL	—			LIFT CHK	NOS. 1,90-93	POWELL FIG. 110
450	1500#	—	FGD CHROME-MOLY	A182 GR F11	STNS STL	STNS STL	STNS STL	—	SCRD	B2.1	GLOBE-NEEDLE, UNION BONNET	4,10,90-93	EDWARD FIG. 1038
								—	FLG'D (F&D)	B16.5	GLOBE	90-93	KEROTEST NO. N28
			BRONZE					—	SCRD	B2.1	4 WAY SOLENOID	4,5,90-93	EDWARD FIG. 1023
430	1500#	B16.10	FGD CHROME-MOLY	A182 GR F11	STNS STL	STNS STL	STNS STL	—	SCRD	B2.1	PRESS. RED.		VENDOR FURNISHED
552								—	FLG'D F&D	B16.5	GLOBE		
								—			ANGLE STOP-CHK	NOS. 4,5,90-93	EDWARD FIG. 1028
		B16.10	BORDER STEEL	A-105				—			GLOBE - SOCKET WELD	4,5,90-93	1047
			FGD CHROME-MOLY	A182 GR F11				—	FLG'D F&D	B16.5	- ELECTRIC MOTOR	4,5,69,90-93	1048-Y
								—			ANGLE	SEE NOTE 96	
552	1500#		FGD CHROME-MOLY	A182 GR F11	STNS STL	STNS STL	STNS STL	—				NOS. 4,5,90-93	EDWARD FIG. 1029
430	900#	B16.10	CAST CHROME-MOLY	A217 GR WC6				—	SCREWED	B2.1	GLOBE (LOCKED CLOSED - SEE GEN. NOTE 9)		
								—	FLG'D F&D	B16.5/10	ANGLE PISTON LIFT CHK. VALVE	NOS. 4,5,90-93	EDWARD FIG. 1048
													EDWARD FIG. 4095

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 6	UNIT 7	UNIT 8	UNIT 10	UNIT 13	UNIT 15	181-6
	5'									
					20'			30'		
	12	40'	38'							
	60'			25'			16'			
18'	30'	30'	12'		20'			50'		
40'	80'		63'		40'					25'0"
					50'	20'		60'		
62'	10'				25'	28'		220'		
15'	60'		56'	60'		70'		6'		
2'	30'			1'				20'		
20'	65'			15'				40'		
	8'			30'	20'	50'		20'	20'	
				5'						
										30'-0"
										10'-0"
	12'			6'						31'-0"
			2'							
					160'					
					40'					
					20'					
					5'					
		70'	70'		40'	40'				
					20'					
					20'			60'		
					30'	2'-0"				

LIST OF PIPES

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	
505544				1	AW-1	5'-0"		5'-0"	10"	40	0.365	76	284	B36.10	SEAMLESS C
				1	AW-2	80'-0"		80'-0"	8"		0.322				
	[illegible]			1,3	AW-3	90'-0"		90'-0"	6"		0.280				
					AW-4	180'-0"		180'-0"	5"		0.258				
[illegible]					AW-5	180'-0"		180'-0"	4"		0.237				
				1,2	AW-6	40'-0"		40'-0"	3½"	80	0.318				WELDED CAR
505544	505544-E 505544 E	505544-B	505544-C	2,4,6,7	AW-7	303'-0"		303'-0"	3"	40	0.216				
				2,7	AW-8	290'-0"		290'-0"	2½"		0.203				
				1,9	AW-9	160'-0"		160'-0"	2"		0.154				
	[illegible]	505544-C		1,3,5	AW-10	281'-0"		281'-0"	1½"		0.145				
				1,2	AW-11	130'-0"		130'-0"	1"		0.133				
	[illegible]	505544-A	[illegible]	1,3,4,11	AW-12	125'-0"		125'-0"	¾"		0.113				
					AW-13	150'-0"		150'-0"	½"		0.109				
					AW-14	20'-0"		20'-0"	⅜"		0.091				
					AW-15	70'-0"		70'-0"	¼"		0.088				
	[illegible]			1,2	AW-16	30'-0"		30'-0"	4"	80	0.337				
	[illegible]			1,2	AW-17	10'-0"		10'-0"	2½"		0.276				
	[illegible]			1,2	AW-18	35'-0"		35'-0"	2"		0.218				
[illegible]				3	AW-19	20'-0"		20'-0"	1¼"	40	0.140				
82-505544-B				8	AW-20	2'-0"		2'-0"	6"	160	0.864				SEAMLESS
505544				1	W-1	160'-0"		160'-0"	6"	80	0.432	1325	450	B36.10	SEAMLESS CA
				1	W-2	60'-0"		60'-0"	4"		0.337				
				1	W-3	20'-0"		20'-0"	3"	160	0.438				
				1	W-4	10'-0"		10'-0"	2½"		0.375				
				1	W-5	10'-0"		10'-0"	2"		0.343				
				1,11	W-6	260'-0"		260'-0"	1½"		0.281				
				1	W-7	30'-0"		30'-0"	1¼"		0.250				
	505544-C	505544-E		1,5,7	W-8	80'-0"		80'-0"	1"	80	0.179				
				1	W-9	90'-0"		90'-0"	¾"		0.154				

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 6	UNIT 7	UNIT 8	UNIT 13	371-01-3	181-6
	2								
					2				
	5						1		
		1	1		1		2		
3	6								
	2								
1						1	3		
	2								
2							1		
	2								
3	1								
	1								2
3	3								
4	2			3	4	5	1 3		
	2								
					1				
						1			
2									
1							1		
	1								
	1								
	1								
	1								
	1								
					1				
					1				
1							1	1	
	2								
	1								
	2			1					
	1								
							2		
				1					
				1					
2									
	1								
						1			
					5				
					5				
					2	2			
					2	1			
						1			
					1				
					1				
					3	3			
		1	1		1				
					3				
					7				
					1	1			
					1	1			
					1				
					2				
					1				
					2				

LIST OF VALVES

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS. STD	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	SEAT
505500					AW-100	2	10"	76	187	150#	B16.10	CAST STEEL	A216 GR WCB	BRONZE
					AW-101	3	8"	66	284					
					AW-102	7	5"	66	284					
					AW-103	3	4"	66	284					
	505500-H			5	AW-104	9	3"	76	187					
	505500-G			4,5	AW-105	2	3"	76	187					
				9	AW-106	5	2½"	66	284					
					AW-107	1	2"	66	284					
	505500-G			4	AW-108	2	1½"	76	187	200#	—	BRONZE	B-61	
					AW-109	1	2½"	66	284	150#	B16.10	CAST STEEL	A216 GR WCB	
505500-A					AW-110	3	1"		212	200#	—	BRONZE	B-61	
505500	Supply (11)				AW-111	2	3"	76	187	150#	B16.10	CAST STEEL	A216 GR WCB	
	Supply (1)				AW-112	6	2"	66	284	200#	—	BRONZE	B-61	
	Supply				AW-113	2	1½"	76	187		—			
Supply				10	AW-114	7	1"	66	212		—			
505500	Supply (14)			7	AW-115	24	½"				—			
					AW-116	8	½"				—			
					AW-117	2	3"	76	187	150#	B16.10	CAST STEEL	A216 GR WCB	
					AW-118	1	4"	66	284					
					AW-119	1	2"			200#	—	BRONZE	B-61	
505500-H					AW-120	2	1½"		212		—			
500017				3,5	AW-121	1	3"			150#	B16.10	CAST STEEL	A216 GR WCB	
				4,6	AW-122	1	1"				—			
					AW-123	1	1½"				—			
					AW-124	1	1"				—			
500006				7	AW-125	1	1"			300#	—	CARBON STL		
500017					AW-126	1	1½"			150#	—			
					AW-127	1	2"				—			
				7	AW-128	1	1"				—			
					AW-129	1	1"				—	BRONZE		
505500					AW-130	1	½"				—			
					AW-131	1	2"				—			
					AW-132	1	½"			200#	—	BRONZE	B-61	BRONZE
505500-K					AW-133	2	½"	76	187		—			
Supply				6	AW-134	1	1½"				—			
505500				4	AW-135	3	½"	66	284		—			
					AW-136	1	4"	66	284	150#	B16.10	CAST STEEL	A216 GR WCB	
505500-F					AW-137	2	2½"				—			
505500-F				3	AW-138	1	¼"	76	187	200"	—	BRONZE	B-61	
500007				3	AW-139	1	1½"	—	—	125"	—			
500017				3	AW-140	2	3"			150#	B16.10	CAST STEEL	A-216 GR WCB	
505500-G				4	AW-141	1	4"							
				4	AW-142	1	½"	125	289	200#	—	BRONZE	B-61	BRONZE
505500	505500-G			4	W-100	5	6"	1313	430	900#	B16.10	CAST CHROME-MOLY	A217 GR WC6	STNS STL
	505500-C (6)			1	W-101	5	6"							
					W-102	4	4"							
				3	W-103	3	4"							
				3	W-104	1	4"							
					W-105	1	3"							
					W-106	1	2½"	125	289	150#		CAST STL	A216 GR WCB	BRONZE
					W-107	6	2"	1313	552	1500#		FGD CHROME-MOLY	A182-GR F11	STNS STL
					W-108	1	1½"		430					
					W-109	6	½"				—			
				4	W-110	15	½"				—			
500087				4	W-111	1	½"							
500041-B					W-112	2	2"				—			
500018				6,10	W-113	2	½"		552		—	FGD CHROME-MOLY	A182-GR F11	STNS STL
500018				6	W-114	1	1½"		552		—			
505500-H				10	W-115	2	½"		430		—			
				4,5	W-116	1	2"				—			
				4	W-117	2	½"		552			FGD CHROME-MOLY	A182-GR F11	STNS STL
				4	W-118	2	½"		430		B16.10			
505500-H				4	W-119	2	6"			900#		CAST CHROME-MOLY	A217 GR WC6	
				4,5	W-120	2	1¼"		430	1500#	—	FGD CHROME-MOLY	A182 GR F11	
				4	W-121	2	1½"	125	289	200#	—	BRONZE	B-61	BRONZE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-11-1

FRAME 3 OF 3

LIST OF PIPES

PIPING PACKAGE UNIT APPLICATION: UNIT #1 – UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION UNIT #3	UNIT #4	UNIT #7	UNIT #8	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	GALV.	TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	°F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SER
60'	120'	20'	180'	505544				1	W-10	360'0"		360'0"	½"	80	0.147	1325	430	B36.10	SEAMLESS CARBON STEEL	A 106 GR B	HIGH PRESSURE FEED & BOILE
20'	17'							1	W-11	5'0"		5'0"	¼"	↓	0.088	↓	↓				
				↓				1	W-12	40-0		40-0	¾"	160	0.218	1313	552	↓	↓	↓	↓
		40'		505544				19	W-15	80'-0"		80'-0"	3"	40	0.216	125	289	B36.10	SEAMLESS CARBON STEEL	A53 TY.S GR.B	BOILER AND CONDENSATE
		30'						1	W-16	80'0"		80'0"	2½"		0.203						
		50'						1	W-17	40'0"		40'0"	2"		0.154						
		2'						1	W-18	80'0"		80'0"	1½"		0.145						
								1	W-19	10'0"		10'0"	1¼"		0.140						
		70'	130'	↓	505544-E			17	W-20	200'0"		200'0"	½"	↓	0.109	↓	↓	↓	↓	↓	↓

LIST OF VALVES

PIPING PACKAGE UNIT APPLICATION: UNIT #1 – UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION UNIT #3	UNIT #4	UNIT #7	UNIT #8	UNIT #13	UNIT #371-101-3	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	°F	PRESS STD.	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	DISC	STEM	PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	
						~~505500~~					~~W-122~~	~~2~~	~~1½"~~	~~125~~	~~289~~	~~200#~~	~~—~~	~~BRONZE~~	~~B61~~	~~BRONZE~~	~~BRONZE~~	~~—~~	~~MONEL~~	~~SCREWED~~	~~B2.1~~	~~SWING~~
		2				600012-C					W-123	2	2"	1313	430	600#	—						—	FLG'D F&D	B16.5	GLOBE
		2									W-124	2	1½"				—						—			ANGLE
		2									W-125	2	1½"			↓	—						—			CONTRO
						↓				~~1~~	~~W-126~~	~~2~~	~~6"~~	~~↓~~	~~↓~~	~~900#~~	~~B16.10~~	~~CAST CHROME-MOLY~~	~~A217 GR WC6~~	~~STNS. STL~~	~~STNS. STL~~	~~STNS. STL~~	~~—~~	~~FLG'D F&D~~	~~B16.5~~	~~ANGLE~~
		2				505500-G				4	W-127	2	2"	125	289	150#	B16.10	BRONZE	B61	BRONZE	BRONZE	BRONZE	—	FLG'D (F.F.)	B16.5	GATE
		2				↓				4	W-128	2	2"	↓	↓	↓	↓	↓	↓	↓	↓	—	—	↓	↓	SWING
			1			SUPPLY					W-129	4	½"	125	289	200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED	B2.1	GLOBE
						~~505500~~				~~4~~	~~W-130~~	~~1~~	~~½"~~	~~1313~~	~~430~~	~~1500#~~		~~FGD. CHROME-MOLY~~	~~A182 GR F11~~	~~STNS. STL~~	~~STNS. STL~~	~~STNS. STL~~	~~—~~	~~↓~~	~~↓~~	~~LIFT C~~
						-G				4	W-131	1	½"	1313	430	3000#	—	STEEL	A108 GR12L14	STNS. STL	STNS. STL	STNS. STL	—	SCRD.	B2.1	GLOBE
		1		2		↓ -G				4	W-132	8	1"	1313	430	1500#	—	FGD. CHROME-MOLY	A182 GR. F11	STNS. STL	STNS. STL	STNS. STL	—	FLG'D (F&D)	B16.5	GLOBE
					2	500041				10	W-133	2	¼"	125			—	—	—					SCRD.	B2.1	4 WAY
					2	500041				10	W-134	2	¼"	↓	↓		—	BRONZE	—					SCRD.	B2.1	PRESS.
						505500					W-135	10	½"	1313	430	1500#	B16.10	FGD. CHROME-MOLY	A182 GR F11	STNS. STL	STNS. STL	STNS. STL	—	FLG'D F&D	B16.5	GLOBE
1	1										W-136	2	1½"	1313	552		↓						—	↓	↓	ANGLE
1	1	6	3			↓	505500-G	505500-M		41	W-137	11	½"				—	↓	↓				—	———	———	GLOBE
1	1	1	1			505500-B				10	W-138	4	1½"				B16.10	FORGED STEEL	A-105				—	FLG'D F&D	B16.5	↓
1	1	1	1			505500	505500-C(G)			1	W-139	4	1½"	↓	↓	↓	↓	FGD. CHROME-MOLY	A182 GR. F11	↓	↓	↓	—	↓	↓	ANGLE
											W-140												—			
						505500					W-141	4	¾"	1313	552	1500#	—	FGD. CHROME-MOLY	A182 GR. F11	STNS. STL	STNS. STL	STNS. STL	—	SCREWED	B2.1	GLOBE
		1	1			505500-J				7	W-142	2	4"	1313	430	900#	B16.10	CAST CHROME-MOLY	A217-GR WC6	↓	↓	↓	—	FLG'D F&D	B16.5/10	ANGLE

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-11-2

FRAME 1 OF 4

LIST OF FLANGES

REQUISITION NO.			ALT NO.	FLANGE IDENT NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO.	BOLTING IDENT NO.	AMT REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	SERVICE	CODE NO.	REMARKS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	4-15-77		1. REVISE W-412 THRU W-415 FROM STUDS TO BOLTS. 2. QTY OF AW-213 WAS 3.	G.L.W.	8-1-77 5-18-77
2	5-23-77		1. ADDED AW-214, AW-215, AW-313 & AW-314 2. ADDED AW-216	Seec R L	
3	9-2-77		1. ADDED AW-217, AW-218, AW-219, AW-316 AW-316, AW-317, AW-408, W-209 & W-408, W-409 2. QTY REVISED AS FOLLOWS: AW-204-20 WAS 12 AW-404-32 WAS 28 AW-206-58 WAS 28 AW-405-36 WAS 16 AW-209-7 WAS 4 W-400-348 WAS 96 AW-303-24 WAS 18 W-402-144 WAS 80 AW-306-42 WAS 36 W-403-64 WAS 48 AW-308-8 WAS 7 AW-309-7 WAS 4 AW-402-216 WAS 168 W-200-FROM 12 TO 34, W-201 FROM 5 TO 6 W-202 FROM 16 TO 22, W-203 FROM 2 TO 4 W-300 FROM 8 TO 21, W-301 FROM 4 TO 6 W-302 FROM 10 TO 22, W-303 FROM 2 TO 3 W-305 FROM 4 TO 5	RJK	
4	10-28-77		1- ADDED W-210, W-211, W-317, AW-220 & AW-409 2- INCR. QTY OF: AW-207 (16-26) AW-303 (24-31), AW306 (42-45) AW-307 (19-23), W 307 (4-5) AW-402 (216-264), AW-403 (358-384), AW-404 (32-36) W-406 (16-44). 3- DECR. QTY OF W203 (4-3).	PCO	
5	12-1-77		1- ADDED W-217 PER YIS NO. 4650-22-50	PCC	
6	1-26-77		1. ADDED AW-221, AW-222, AW-318, AW-319, AW-410, AW-411 & W-410. 2. REVISED THE QTY. FOR: AW-207 (26-34), AW-210 (4-5), AW-212 (3-5), AW-219 (2-4), AW-306 (45-46), AW-307 (23-28), AW-308 (8-10), AW-310 (4-7), AW-312 (2-9), AW-403 (384-400), AW-407 (8-12), W-200 (34-38), W-205 (6-8), W-206 (22-28), W-300 (21-33), W-305 (5-7), W-400 (348-372), W-403 (64-70). 3. REVISED THE SIZE & QTY OF W-210, AS PER YIS 4650-22-53	RHM	2-1-78 AJA
7	3-15-78		1. INCREASED THE QTY. FOR: AW-204 (20-22), AW-206 (53-57), AW-207 (34-35), W-213 (2-4), W-408 (28-44), W-314 (4-5), W-413 (16-32). 2. ADDED W-218, W-219, W-220, W-318.	RHM	5-8-78 AJA
8	4-27-78		1. REVISE QTY. OF ITEMS W-314 FROM 5 TO 8, W-413 FROM 32 TO 36	L.P.K	5-8-78 AJA
9	9-27-78		1- QTY. OF THE FOLLOWING ITEMS INCR. PER YIS. 4650-22-283 ITEM W-412 INCR. FR 24 TO 36 W-207 5 8 W-307 5 8 W-408 44 100	RG.	9-26-78 AJA

HULL	DESIGN	CHARGE
4651	27,340 DWT CONTAINERSHIP	8450
4650		8450

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 29 DEC 1976
DRAWN G. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED JEK
APPROVED

PLAN NO. M-4650-372-11-2
ALT. NO. 9

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR FEED, CONDENSATE, AIR EJECTOR & BOILER BLOW

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	9-19-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

M-728

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-11-2

FRAME 2 OF 4

GES

TYPE		SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
FLANGE FED	SCH 40 PIPE	3RD & 4TH STAGE HEATERS		NOS 90-95	TUBE TURN PT.151
D FLAT FACE	SCH 40 PIPE	FEED PUMP RECIRCULATING LINE			TUBE TURN PT. 150
ED	SCH 40 PIPE	PORT FEED PUMP RECIRC. LINE			

TS

TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
	CONDENSATE SAMPLING			JOHNS MANVILLE NO.60
STAINLESS STEEL	MAIN & AUX. FEED RECIR.		CARBON STL. OUTER RING	
ET	DRAINS 4TH STAGE HTR.			JOHNS MANVILLE NO.60
GASKET	HO. FD. RECIRC. LINES			

& NUTS

BOLTS DIA.	BOLTS LGTH.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD.	SERVICE	CODE NO.	REMARKS
⅝"	3"	A 307 GR. B	⅝"		FOR 150# 3"& 2" JOINTS		
⅝"	2¾"		⅝"		2"		
½"	2½"		½"		1½"		
½"	1¾"		½"		1"		
⅝"	3¼"		⅝"		FOR 300# 2"		
½"	2¾"		½"		FOR 300# ½"		(FOR ORIFICE PLATES)

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

FLANGE IDENT. NO.	UNIT 1	UNIT #2	UNIT #3	UNIT 4	UNIT	UNIT 6	UNIT #7	UNIT #8	UNIT	UNIT #10	UNIT	UNIT	UNIT 13	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181-6
AW-200		2																							
AW-201							8						1												
AW-202		1																							
AW-203		17				4				2			4												
AW-204	4	2	10	2			7																		2
AW-205																									4
AW-206	19	21		11			4						4												
AW-207							7	3					23												2
AW-208	4	2											1												
AW-209		7																							
AW-210	2	1					2																		
AW-211																									
AW-212		1					4																		
AW-213																									5
AW-214	2																								
AW-215	2																								
AW-216		5																							
AW-217	1																								
AW-218		2																							
W-200							38																		
W-201							6																		
W-202							13	9																	
W-203							3																		
W-204							1																		
W-205							6	2																	
W-206			8	9			5	6																	
W-207			1				3						4												
W-208				2				6																	
W-209							1	1																	
W-210							1																		
W-211							8																		
W-212							5																		
W-213							4																		
W-214							2																		
W-215							2																		
W-216																									
W-217							1	1																	
W-218							2																		
AW-219		2					2																		
AW-220																									

REQUISITION NO.			ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.
505501-A				AW-200	4	10"	76	284	99	150#	B16.5	FORGED STEEL	A-105
				AW-201	9	8"							
				AW-202	3	6"							
				AW-203	30	5"							
	505501-C	505501-J	3,7	AW-204	27	4"							
				AW-205	4	3½"							
	505501-G	505501-J	3,7	AW-206	59	3"							
	505501-AA	505501-G	4,6,7	AW-207	35	2½"							
				AW-208	7	2"							
	505501-C		3	AW-209	7	1½"							
	505501-G		6	AW-210	5	1"							
				AW-211	2	¾"							
	505501-G		6	AW-212	5	½"							
	505501-B		1	AW-213	5	2"							
505501-B			2	AW-214	2	1½"							
505501-B			2	AW-215	2	1"							
505501-B			2	AW-216	5	5"							
505501-C			3	AW-217	1	¾"							
			3	AW-218	2	1½"							
505501-A	505501-C	505501-G	3,6	W-200	38	6"	1325	420	1988	900#	B16.5	FORGED STEEL	A 105
			3	W-201	6	5"							
		505501N(G)	3	W-202	22	4"							
			3,4	W-203	3	3"							
				W-204	2	2½"				1500#			
	505501-A		6	W-205	8	2"							
			6	W-206	28	1½"							
	505501-D	505501-N	9	W-207	8	1"							
				W-208	54	¾"							
505501-C			3	W-209	[illegible]	2							
505501-G			4,6	W-210	1	3"				900#			
505501-D			4	W-211	8	1¼"				1500#			
505501-A				W-212	5	3"	125	289	188	150#	B16.5	FORGED STEEL	A 105
	505501-J		7	W-213	4	2½"							
				W-214	4	2"							
				W-215	2	1½"							
				W-216	2	¾"							
505501-E			5	W-217	2	4"	1325	430	1988	900#	B16.36		
505501-J			7	W-218	2	2"	125	289	188	600#	B16.5	FORGED STL.	A105
505501-C	505501-G		3,6	AW-219	4	1"	76	284	99	300#	B16.5	FORGED STL.	A105
505501-D			4	AW-220	1	4"							

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

GASKET IDENT. NO.	UNIT 1	UNIT #2	UNIT #3	UNIT 4	UNIT	UNIT 6	UNIT #7	UNIT #8	UNIT	UNIT #10	UNIT	UNIT	UNIT 13	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181-6
AW-300		2																							
AW-301													2												
AW-302		1																							
AW-303		22				2				2			5												
AW-304	2	2	6	2																					
AW-305																									2
AW-306	15	22		5									4												
AW-307							2	3					20												
AW-308	4	2						1					1												2
AW-309		7																							
AW-310	2	1					4																		
AW-311																									
AW-312		1					8																		
AW-313	2																								
AW-314	2																								
AW-315	1																								
W-300							33																		
W-301							6																		
W-302							11	11																	
W-303							3																		
W-304							1																		
W-305							5	2																	
W-306			8	7			4	5																	
W-307							3	1					4												
W-308			1					6																	
AW-316		2																							
AW-317		2																							
AW-318																									
W-312																									
W-313																									

REQUISITION NO.			ALT. NO.	GASKET IDENT NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.
SUPPLY				AW-300	4	10"	76	284	99	150#	B16.21	COMP. ASBESTOS	[illegible]
				AW-301	6	8"							
				AW-302	3	6"							
			3,4	AW-303	31	5"							
				AW-304	12	4"							
				AW-305	4	3½"							
			3,4,6	AW-306	46	3"							
			4,6	AW-307	25	2½"							
			3,6	AW-308	10	2"							
			3	AW-309	7	1½"							
			6	AW-310	7	1"							
				AW-311	2	¾"							
			6	AW-312	9	½"							
Supply			2	AW-313	2	1½"							
Supply			2	AW-314	2	1"							
			3	AW-315	1	¾"							
505524	505524-B	505524-E	3,6	W-300	33	6"	1325	430	1988	900#	COMM'L	STAIN. STEEL	COMM'L
			3	W-301	6	5"							
			3	W-302	22	4"							
			3	W-303	3	3"							
				W-304	2	2½"				1500#			
	505524-B	505524-E	3,6	W-305	7	2"							
				W-306	24	1½"							
	505524-D	505524-H	4,9	W-307	8	1"							
				W-308	50	¾"							
SUPPLY			3	AW-316	2	1½"	76	284	99	150#	B16.21	COMP. ASBESTOS	[illegible]
505524-B			3	AW-317	2	1¼"				300#			
505524-E			6	AW-318	4	½"							
SUPPLY				W-312	4	3"	125	289	188	150#	B16.21	COMP. ASBESTOS	[illegible]
				W-313	2	2½"							

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

BOLTING IDENT. NO.	UNIT 1	UNIT #2	UNIT #3	UNIT 4	UNIT	UNIT 6	UNIT #7	UNIT #8	UNIT	UNIT #10	UNIT	UNIT	UNIT 13	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	181-6
AW-400		24																							
AW-401													16												
AW-402		184				16				16			48												
AW-403	80	100	48	36			16	12					92												16
AW-404	16	8						4																	8
AW-405	8	28																							
AW-406	16	4																							
AW-407		4					8																		
AW-408		8																							
AW-409													4												
W-400							372																		
W-401							30																		
W-402							72	72																	
W-403							54	16																	
W-404							8																		
W-405				28			4	20																	
W-406							24	4					16												
W-407																									
W-408		4					72	24																	
W-409							8	8																	
W-410							8																		

LIST O

REQUISITION NO.			ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD.
SUPPLY				AW-400	48							
				AW-401	48							
			3,4	AW-402	264							
			4,6	AW-403	400							
			3,4	AW-404	36							
			3	AW-405	36							
				AW-406	24							
			6	AW-407	12							
			3	AW-408	8							
SUPPLY			4	AW-409	4							
[illegible]	505529-B		3,6	W-400	372	A193 GR. B7	1⅛"	7½"	B1.1 1"BELOW UNC-2A 1⅛"ABOVE 8UN-2A	A194 GR. I	1⅛"	B1.1 & B18.2 1"BELOW UNC-2B 1⅛"ABOVE 8UN-2B
505529				W-401	40		1⅛"	7¼"			1⅛"	
[illegible]	[illegible]		3	W-402	144		1⅛"	6½"			1⅛"	
		505529-E	3,6	W-403	70		⅞"	5½"			⅞"	
505529				W-404	16		1"	6"			1"	
				W-405	88		1"	5½"			1"	
	505529-D		4	W-406	44		¾"	4½"			¾"	
				W-407	200		¾"	4¼"			¾"	
[illegible]	505529-G	505529-H	3,7,9	W-408	100		¾"	4"			¾"	
			3	W-409	16		1⅛"	7"			1⅛"	
505529-E			6	W-410	8		⅞"	6½"			⅞"	

LIST OF FLANGES

STRUCTURAL MODULAR UNIT APPLICATION UNIT 7	REQUISITION NO.	ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF. #1	CAT. OR DRWG. NO.
3	505501-5	6	AW-221	3	2"	76	284	99	300#	B16.5	FORGED STL.	A-105	SOCKET WELD FLANGE F&D BORE FOR SCH 40 PIPE	3RD & 4TH STAGE HEATERS		NOS. 90-93	TUBE TURN PT. 151
4	↓	6	AW-222	4	½"	↓	↓	↓	↓	↓	↓	↓	↓	↓		↓	↓
8	505501-J	7	W-219	8	2"	125	289	188	150#	B16.5	FORGED STL.	A-105	SOCKET WELD FLG F&D FLAT FACE BORE FOR SCH 40 PIPE	FEED PUMP RECIRCULATING LINE			TUBE TURN PT. 150
2	505501-J	7	W-220	2	1½"	125	289	188	1500#	B16.5	FORGED STL.	A-105	SOCKET WELD FLG F&D BORE FOR SCH 40 PIPE	PORT FEED PUMP RECIRC. LINE			↓

LIST OF GASKETS

STRUCTURAL MODULAR UNIT APPLICATION UNIT 7	REQUISITION NO.	ALT. NO.	GASKET IDENT. NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
6	SUPPLY	7.8	W-314	6	2	125	289	188	150#	B16.21	COMP. ASBESTOS	DITTO GRADE PIIIA	⅛" THK. RING GASKET	CONDENSATE SAMPLING			JOHNS MANVILLE NO. 60
2			W-315	2	1½"												
	↓		W-316	2	½"	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓
6	505524-D	4	W-317	6	1¼"	1325	430	1988	1500#	COMM'L	STAIN. STEEL	COMM'L	⅛" THK. SPIRAL WOUND FLEXITALLIC STYLE "CG"	MAIN & AUX. FEED-RECIR.		W/CARBON STL. OUTER RING	
3	505524-E	6	AW-319	3	2"	76	284	99	300#	B16.21	COMP. ASBESTOS	DITTO GRADE PIIIA	⅛" THK. RING GASKET	DRAINS 4TH STAGE HTR.			JOHNS MANVILLE NO. 60
8	SUPPLY	7	W-318	8	2"	125	289	188	150#	B16.21	COMP. ASBESTOS	DITTO GRADE PIIIA	⅛" THK. FULL FACE GASKET	MN. FD. RECIRC. LINES			

LIST OF STUDS, BOLTS & NUTS

STRUCTURAL MODULAR UNIT APPLICATION UNIT 7	REQUISITION NO.	ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	SERVICE	CODE NO.	REMARKS
36	SUPPLY	9	W-412	36								125	289	A 307 GR. B	⅝"	3"	[illegible]	A 307 GR. B	⅝"	[illegible]	FOR 150# 3" & 2½" JOINTS		
3		7.8	W-413	36											⅝"	2¾"			⅝"		2"		
8			W-414	8											½"	2¾"			½"		1½"		
			W-415	8											½"	1¾"			½"		½"		
24		6	AW-410	24											⅝"	3¼"			⅝"		FOR 300# 2"		
8	↓	6	AW-411	8								↓	↓	↓	½"	2¼"	↓	↓	½"	↓	FOR 300# ½" (FOR ORIFICE PLATES)		

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-11-2

FRAME 3 OF 4

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FLANGES

STRUCTURAL UNIT 7	REQUISITION NO.	ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
3	505501-6	6	AW-221	3	2"	76	284	99	300#	B16.5	FORGED STL.	A-105	SOCKET WELD FLANGE F&D BORE FOR SCH 40 PIPE	3RD
4	↓	6	AW-222	4	½"	↓	↓	↓	↓	↓	↓	↓	↓	↓
8	505501-J	7	W-219	8	2"	125	289	188	150#	B16.5	FORGED STL.	A-105	SOCKET WELD FLG F&D FLAT FACE BORE FOR SCH 40 PIPE	FEED
2	505501-J	7	W-220	2	1½"	125	289	188	1500#	B16.5	FORGED STL.	A-105	SOCKET WELD FLG F&D BORE FOR SCH 40 PIPE	PORT F

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF GASKETS

STRUCTURAL UNIT 7	REQUISITION NO.	ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	
6	SUPPLY	7.8	W-314	6	2	125	289	188	150#	B16.21	COMP. ASBESTOS	D1170 GRADE P1141A	⅛" THK. RING GASKET	CONDENSATE
2			W-315	2	1½									
	↓		W-316	2	1	↓	↓	↓	↓	↓	↓	↓	↓	↓
6	505501-D	4	W-317	6	1¼"	1325	430	1988	1500#	COMM'L	STAIN STEEL	COMM'L	⅛" THK. SPIRAL WOUND FLEXITALLIC STYLE "CG"	MAIN & AUX
3	505526-E	6	AW-319	3	2"	76	284	99	300#	B16.21	COMP ASBESTOS	D1170 GRADE P1141A	⅛" THK. RING GASKET	DRAINS
8	Supply	7	W-318	8	2"	125	289	188	150#	B16.21	COMP ASBESTOS	D1170 GRADE P1141A	⅛" THK. FULL FACE GASKET	MU. FD. R

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF STUDS, BOLTS & NUTS

STRUCTURAL UNIT 7	REQUISITION NO.	ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM STD	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM STD	NUTS MATERIAL ASTM	NUTS DIA.
36	SUPPLY	6,9	W-412	36								125	289	A 307 GR B.	⅝"	3"	[illegible]	A 307 GR B	⅝"
3		1,7,8	W-413	36											⅝"	2¾"			⅝"
8		1	W-414	8											½"	2½"			½"
		1	W-415	8											½"	1½"			½"
24		6	AW-410	24											⅝"	3½"			⅝"
8	↓	6	AW-411	8								↓	↓	↓	½"	2¾"	↓	↓	½"

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FRAME 4 OF 4

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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

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FRAME 1 OF 5

LIST OF FITTINGS

REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO	FITTING IDENT. NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
		7	AW-500	10	8"	76	284	40	0.322	B16.9	SEAM STEEL	A234 GR WPB	90° ELBOW L.R. BUTT WELD	CONDENSATE AND DRAIN TRANSFER	NOS. 90-93	TUBE TURN PT. NO. 1
			AW-501	21	5"				0.258							[illegible]
		7,9	AW-502	13	4"				0.237							[illegible]
			AW-503	4	3½"			80	0.318							[illegible]
			AW-504	40	3"			40	0.216							[illegible]
			AW-505	15	2½"				0.203							[illegible]
			AW-506	1	3×2"				.216×.154				90° RED. ELBOW L.R.			[illegible]
			AW-507	1	3"×1½"				.216×.145							[illegible]
			AW-508	2	5"×4"				.258×.237							[illegible]
			AW-509	4	8"				0.322				45° ELBOW L.R.			[illegible]
			AW-510	1	6"				0.280							[illegible]
			AW-511	4	5"				0.258							[illegible]
			AW-512	3	3"				0.216							[illegible]
		6	AW-513	3	2½"				0.203							[illegible]
			AW-514	1	8"				0.322				TEE - STRAIGHT			[illegible]
			AW-515	6	5"				0.258							[illegible]
			AW-516	4	4"				0.237							[illegible]
			AW-517	7	3"				0.216							[illegible]
		6	AW-518	5	2½"				0.203							[illegible]
			AW-519	1	8×8×4"				.322×.237				REDUCING TEE			[illegible]
			AW-520	1	2½×2½×2				.203×.154							[illegible]
			AW-521	2	8"×6"				.322×.280				CONC. REDUCER			[illegible]
			AW-522	1	6"×4"				.280×.237							[illegible]
			AW-523	4	5"×4"				.258×.237							[illegible]
			AW-524	2	4"×3"				.237×.216							[illegible]
			AW-525	2	3"×2"				.216×.154							[illegible]
			AW-526	4	3"×1½"				.216×.145							[illegible]
			AW-527	3	2½×2"				.203×.154							[illegible]
			AW-528	2	2½×1½				.203×.145							[illegible]
			AW-529	2	2"×1"				.154×.133							[illegible]
			AW-530	24	2"	150#			—	B16.3	MALLEABLE IRON	A197	90° ELBOW - SCRD.			FLAGG FIG. NO. 1001
		4,5	AW-531	25	1½"				—							1001
			AW-532	15	1"				—							1001
		2	AW-533	10	¾"				—							1001
			AW-534	56	½"				—							1001
			AW-535	6	⅜"				—							1001
			AW-536	5	¼"				—							1001
			AW-537	2	1"×½"				—				90° ELBOW REDUCING -			1001
			AW-538	2	¾"×½"				—							1001
			AW-539	3	2"				—				TEE - STRAIGHT			1011
		2	AW-540	2	1½"				—							1011
			AW-541	22	1"				—							1011
			AW-542	2	¾"				—							1011
			AW-543	1	[illegible]				—				TEE - REDUCING			1021
			AW-544	1	[illegible]				—							1021
		6	AW-545	3	[illegible]				—							1021
			AW-546	1	[illegible]				—							1021
			AW-547	2	[illegible]				—							1021
			AW-548	1	[illegible]				—							1021
			AW-549	2	[illegible]				—				REDUCING COUPLING			1040
		6	AW-550	6	2"×1"				—							1040
			AW-551	2	[illegible]				—							1040
			AW-552	1	[illegible]				—							1040
			AW-553	15	2"	300#			—				UNION - SCRD. BRONZE TO IRON SEATS			1031
			AW-554	20	1½"				—							1031
			AW-555	7	1"				—							1031
		2	AW-556	10	¾"				—							1031
			AW-557	37	½"				—							1031
			AW-558	7	[illegible]				—							1031
			AW-559	5	[illegible]				—							1031
			AW-560	1	4"	150#			—		CAST STEEL	A216 GR WCB	FLGD. SIMPLEX STRAIGHT THRU STRAINER W/ONE COVER / ⅛" PERF. W/BKT. BASKET		175	[illegible]
			AW-561	3	3"				—				FLGD. "Y" TYPE STRAINER FLG. - BRONZE SCREEN WITH .033 PERF.		175	MUELLER FIG. NO. 761
			AW-562	1	2"	150#			—		BRONZE	B62	SCRD. "Y" TYPE STRAINER - BRONZE SCREEN WITH .033 PERF.			NO. 351
			AW-563	1	1½"				—							NO. 351
			AW-564	2	1"				—							NO. 351
			AW-565	1	¾"	150#			—		BRONZE - MONEL NOZZLE		SCRD. EDUCTOR - ½" SUPPLY × ¾" SUCT. × ¾" DISCH.		REF. 6-A ITEM 3, FIG 2, REF. 6-B	[illegible]
		8	AW-566	2	2½"	150			0.600	B36.10	STEEL - BRONZE	A53 TYPE E GR. B	FLGD. HOSE ADAPTER		90-93, 179/189	BETH. STD. EF-345
			AW-567	2	10"	150#			—	—	NEOPRENE	—	EXPANSION JOINT - 8" FACE TO FACE - FLGD. F.D.		FURNISHED WITH FEED CONTROL SYS.	MERCER STYLE 500R
		6	AW-568	1	5"								FLOW NOZZLE			BAILEY METER CO. DWG. NO. A104817-C
			AW-569	10	½"	250#			—	—	BRONZE	B62	GAUGE VALVES - COMPLETE W/RODS & GLASS 21" C. TO C. AUTO. TYPE		NOS 90-93	JOHN C. ERNST FIG. 416-04
			AW-570	2	2½"			80	0.276	B16.9	SEAM. STEEL	A234 GR WPB	90° ELBOW L.R. BUTT WELD			TUBE TURN PT. #2
			AW-571	4	4"				0.337							
		6,6,7	AW-572	17	2"	3000#			—	B16.11	FORGED STEEL	A234	90° ELBOW SOCKET WELD			BONNEY FORGE
		6	AW-573	8	2½"	X HVY			—	—	STEEL	AISI-C1015	BHD SLEEVE			EF-496 FIG #2XH
			AW-574	3	2"				—	—						
		6	~~AW-575~~	~~2~~	~~4"~~						~~20.4# STEEL PL~~	~~ABS GR A~~	~~TANK DRAIN DOUBLER 9" OD × 4½" I.D.~~			~~DET. "C" REF. #2~~
		6	~~AW-576~~	~~2~~	~~2½"~~								~~6" OD × 2½" I.D.~~			~~"D-B"~~
			AW-577	23	½"	3000#			—	B16.11	FORGED STEEL	A234	COUPLING SCRD.		NOS 90-93	BONNEY FORGE
			AW-578	2	3½×3½×2			80	.318×.218	B16.9	SEAM. STEEL	A234, GR WPB	REDUCING TEE BUTT WELD		NOS 90-93	TUBE TURN PT NO. 22
		2	AW-579	5	½"	150#			—	B16.3	MALLEABLE IRON	A197	45° ELBOW SCRD			FLAGG FIG. 1002
			AW-580	10	1¼"				—				90°			1001
			AW-581	5	1¼"	300#			—				UNION - BRZ TO IRON SEATS SCRD			1031
		2	AW-582	1	1½×1¼	150#			—				90° - REDUCING ELBOW			1001
		2	AW-583	1	1½×1¼×¾				—				TEE REDUCING			1021
		2	AW-584	10	5"×1"	3000#			—	—	FORGED STL	A105	THREDOLET RUN & OUTLET I.P.S.		175, 90-93	BONNY FORGE
		6,10	AW-585	8	5"×½"				—							
		2	AW-586	1	¼"	300#			—	—	BRONZE	B62	Y-STRAINER, SCRD. W/.033" PERF. MONEL SCREEN			MUELLER FIG. 352
		2,6	AW-587	1	¼"				—	—	WROT. STEEL	A234 GR WPB	DESUPERHEATER NOZZLE		VENDOR FURN.	[illegible]
		6,7	AW-588	4	4"			40	0.237	B16.9	SEAM. STEEL	A234 GR WPB	45° ELBOW L.R. BUTT WELD		NOS 90-93	TUBE TURN PT. NO. 5
			AW-589	5	1½"	150#			—	B16.3	MALLEABLE IRON	A197	45° ELBOW SCRD			FLAGG FIG NO. 1002
			AW-590	3	6"			40	.280	B16.9	SEAM. STL	A234, GR WPB	90° ELBOW L.R. BUTT WELD		NOS 90-93	TUBETURN PT #1
			AW-591	2	6"						STEEL	—	FUNNEL W/O COVER A-12", B-7½, C-7", D-6" →	(IT. 76, EF-355-A)		EF-355-A, TYPE "A"
			AW-592	2	3"×½"	3000#			—	—	FORGED STEEL	A-105	THREADOLET RUN & OUTLET, I.P.S.	CONDENSATE AND DRAIN TRANSFER	NOS 90-93	BONNEY FORGE
			AW-593	1	2×2×1¼	150#			—	B-16.3	MALLEABLE IRON	A-197	TEE-REDUCING			FLAGG FIG. NO. 1021
			AW-594	1	2"×½"	3000#			—	—	FORGED STEEL	A-105	THREADOLET RUN & OUTLET I.P.S.			BONNEY FORGE
			AW-595	2	½"				—	—		A-181	UNION-SCRD W/ORIFICE ⅛" DIA HOLE		175	CLAYTON MARK
			AW-596	4	1½×1"	150#			—	B-16.3	MALLEABLE IRON	A-197	REDUCING COUPLING SCRD			FLAGG FIG. NO. 1040
			AW-597	1	[illegible]				—				TEE - REDUCING			1021
		6	AW-598	3	¾×½"				—	B16.15	BRONZE	B62	BUSHING			4171
		6	AW-599	1	½"	3000#			—		FORGED STEEL	A-181	UNION-SCRD W/ORIFICE 3/16" DIA. HOLE		175	CLAYTON MARK
			AW-600	1	6"×3"			40	.280×.216	B16.9	SEAM STL	A234 GR WPB	CONCENTRIC REDUCER		NOS. 90-93	TUBE TURN PT. #90
			AW-601	1	6"×1"	3000#			—	B16.11	FORGED STL	A-105	THREADED ELBOLET (IPS RUN & OUTLET)		NOS. 173, 90-93	BONNEY FORGE
			AW-602	4	1½×½	3000#			—				RED. INSERT SOCKET WELD		NOS. 90-93	BONNEY FORGE
			AW-603	8	1½"	3000#			—	B16.11	FORGED STL	A-105	90° ELBOW SOCKET WELD.		NOS 90-93	BONNEY FORGE
			AW-604	2	3"×1"	3000#				—	FORGED STL	A-105	SOCKOLET (IPS RUN & OUTLET)		NOS. 171, 90-93	BONNEY FORGE
		2,7	AW-605	5	6"	STD			—	—	STEEL	[illegible]	WELDING SLEEVE			EF-496-FIG #1
		2,7	AW-606	62	5"				—	—	STEEL	[illegible]				
		2,7,8	AW-607	85	3"				—	—	STEEL	[illegible]				
			AW-608	1	1"	76	284	3000#	—	—	FORGED STL.	A-181	UNION - SCRD W/ORIFICE ¼" DIA. HOLE		NOS 90-93	CLAYTON PART #6012A1
			AW-609	1	½"				—	—						

NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

(CONT.) ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
7	3-16-78		1. INCREASED THE QTY FOR W-523(1-3), AW-500(7-10), AW-502(10-11), AW-572(16-17), AW-588(2-4), AW-605(3-5), AW-606(54-62), AW-607(71-84), AW-620(8-24), AW-621(25-39), AW-628(8-32), W-593(1-5) 2. ADDED AW-641 & W-597 THRU W-602. THE ABOVE REVISIONS REFLECT CHGS. PER Y.I.S. 4650-22-82 & DCR'S. DTD. 2-17-78, 3-1-78 & 3-2-78.	RHM	3-30-78
8	7/5/78		1- INCR. QTY OF AW-605 (14-15), AW-607 (84-85) & W-525(4-5) & W583(30-34) 2- REVISED DESCRIP. OF AW-566 3- DELETED - W-595 4- ADDED AW-642 & W-603 - W-606. 5- REVISED DESCRIP. OF AW-635 & ADDED AW-643 THRU AW-645 PER Y.I.S. NO. 4650-22-160.	PCD	7-13-78
9	9-28-78		1- IN ACCORD WITH Y.I.S. M-4650-22-283 QUANT. OF ITEM AW-621 CHANGED FROM 39 TO 44, AND ITEM AW-640 CHANGED FROM 1 TO 2 2- ITEM W-609 ADDED PER Y.I.S. M-4650-22-288 3- ITEM W-608 ADDED PER Y.I.S. M-4650-22-250 4- ITEMS W-607, AW-646, & AW-647 ADDED 5- ITEM W-606 CHANGED FROM BUSHING TO ADAPTER	P.G.	
	1-31-79		6. AW-502 QTY 13 WAS 11 PER Y.I.S. M4650-22-296 7. ADDED AW-648 PER Y.I.S. 4650-22-347		
	2-9-79		8. W-587 QTY 4 WAS 2; ADDED W-610 & W-611 PER Y.I.S 4650-22-403	EJK	2-22-79
10	9/17/79		1) REVISED DESCR. OF FITT. NOS. AW-618 AND AW-623 TO SUIT AS INSTALLED ON 4650. 2) INCR. QTY OF AW-588 (7 TO 8) 3) ADDED AW-649 & AW-650 4) ADDED AW-651 TO SUIT Y.I.S 4650-22-490.	J.H.	9-24-79

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	4-11-77		1. ADDED AW-578.	C.W.H.	
2	5-4-77		1. ADDED PC "AW-579 THRU AW-587 2. CHG QTY - AW-533(2-10), AW-536 (2-5), AW-554(5-20), AW-556(2-10) AW-559(1-5).	RJL	G.G. SHARP LTR. DATED 8-1-77
	6-10-77		3. ADDED AW-588, AW-589 AND W-559 TO W-563	D.L.B.	
			4. ADDED - AW-590 & AW-591	DTHB	
	6-24-77		5. ADDED - AW-592 THRU AW-599 6. REVISED QTY OF AW-540 (WAS 1)	DECO	
3	6-29-77		1. REVISED QTY. OF W-560 (2 TO 4), AW-509 (28 TO 29), AW-508 (1 TO 2) AW-512 (1 TO 3), AW-572 (5 TO 7) AND AW-596 (2 TO 4) 2. ADDED AW-600, AW-601 AND AW-603 THRU AW-611	DLB	
4	9-9-77		1. W-579 WAS W-558 QTY 19 WAS 6 2. ADDED W-564 THRU W-578, W-580 & W-581 AW-612 THRU AW-619 3. QUANTITIES REVISED AS FOLLOWS AW-531 - 23 WAS 18; W-509 - 10 WAS 8 AW-585 - 4 WAS 2; W-511 - 3 WAS 2 AW-608 - 6 WAS 2; W-554 - 44 WAS 10 W-500 - 29 WAS 19; W-555 - 74 WAS 10 W-501 - 10 WAS 6; W-556 - 28 WAS 5 W-502 - 5 WAS 4; W-557 - 30 WAS 4	EJK	
5	10-20-77		1- CORRECTED DESCRIPTION OF ITEM W-532 & W-540 FROM SCR'D TO S.W. 2- CORRECTED FITTING W-552 & W-553 DESIGN CRITERIA FROM 1313# & 552° TO 125# & 289° TO COMPLY WITH SCH. NO. THIS PORTION IS PER A.B.S. LTR. DATED 19-SEPT. 77 - REFER. TO: RKA: ML FILE REF: T8-2. 3- FOR THOSE FITTINGS WHERE THE CRITERIA DESIGN READ 1313# & 552° CHANGED TO 1325# & 552° PER LATEST DIAGRAM. 4- CHANGED THE SIZE OF AW-612 (1½"×1½"×¼" TO ½") STRAIGHT TEE & W-565 (⅜"×1½"×¼" TO ½") STRAIGHT TEE. ALSO THE D. CRITERIA TO 125# & 289° IN LIEU OF 1313# & 552° PER LATEST DEVELOPMENT. 5- ADDED FITTING NOS. AW-620 TO AW-627, W-577 & W-582 TO W-590. 6- INCR QTY OF AW-531 (23-25), W-568 (7-11) W-573 (1-7), W-576 (10-0) W-578 (1-3), & W-581 (1-3) 7- DECR. QTY OF W-564 (6-4) 8- CHANGED THE SIZE OF W-575 FROM 3"×2½" TO 3"×2" & W-573 FROM ¼" TO ¾" PER DEVELOPMENT.	PCG	
6	1-31-78		1. ADDED W-591 THRU W-595, AW-602 & AW-628 THRU AW-640. 2. REVISED THE QTY. FOR: AW-504 (37-40), AW-513 (2-3), AW-518 (3-5), AW-550 (4-6), AW-572 (7-16), AW-573 (4-8), AW-577 (20-23), AW-585 (4-7), AW-598 (1-3), AW-603 (6-8), AW-606 (48-54), AW-607 (48-71), AW-613 (1-2), AW-621 (20-25), W-529 (20-30), & W-560 (4-7); AW545 (1-3) 3. REVISED SIZE FOR: AW-613 (5"×½" TO 5"×1½") W-577 (1½" TO 2") 4. REMOVED RESERVATION FROM: AW-568, AW-587 & AW-599. 5. DELETED AW-575 & AW-576.	RHM	2-2-78

(CONT.)

HULL	DESIGN	CHARGE
4651	27,340 DWT CONTAINERSHIP	10-8450
4650		10-8450

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE Jan 6, 1977
DRAWN G. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M-4650-372-11-3
ALT. NO. 10

FITTING LIST
FOR
FEED, CONDENSATE, AIR EJECTOR,
AND BOILER BLOW PIPING

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-18-77				
A.B.S.	9-19-77				
U.S.C.G.	╳				
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				

UAD-50112

REFERENCE PLANS

NO.	PLAN NO.	TITLE
3	M-4650-111-18	ARRGT. OF PIPING LOWER LVL. PORT SIDE AFT MODULE # 4
2	M-4650-181-6	LOC. & DETS. OF I.B., DIST. WTR & POT. WTR. TK. PIPING
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L.

M-729

DATE OF ISSUE	
ALTERATION	
ENGINEERING DISTRIBUTION	
OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R.	
OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT	
MACH. DRAFT	
ELEC. DRAFT	
OUTFIT DRAFT	
ESTIMATING	
PRODUCTION	
ORDER DEPT	
JOINER DEPT	
TOTAL ENG. DIST.	
YARD DISTRIBUTION	
PIECE RATE	
TEST DEPARTMENT	
GROUND ASSEMBLY	
STRUCT. SUPER.	
OPTICAL	
WET DOCK	
PIPE SHOP	
OUTFIT	
BOILER SHOP	
OUTSIDE MACH.	
ELECTRIC SHOP	
SHEET METAL SHOP	
COPPER SHOP	
PAINT SHOP	
WELDING	
MOLD LOFT	
BRACKET SHOP	
TOTAL YARD DIST.	

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-11-3

FRAME 2 OF 5

SERVICE | SPECIAL NOTES FROM REF. NO. 1 | MANUFACTURER DWG OR FIG. NO. OR EQUAL

PIPING PACKAGE UNIT APPLICATION: UNIT #1 – UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION: UNIT 1 – UNIT 15, UNIT 181-6

LIST

181-6	REQUISITION NO.	REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL
	SUPPLY			7	AW-500	10	8"	70	284	40	0.322	B16.9	SEAM. STEEL
					AW-501	27	5"				0.258		
4				7,9	AW-502	13	4"				0.237		
					AW-503	4	3½"			80	0.318		
				3,6 8	AW-504	40	3"			40	0.216		
					AW-505	15	2½"				0.203		
	505502				AW-506	1	3"x2"				216x154		
					AW-507	7	3"x1½"				216x145		
		505502-B		3	AW-508	2	5"x4"				258x237		
					AW-509	4	8"				0.322		
					AW-510	1	6"				0.280		
					AW-511	4	5"				0.258		
		505502-B		3	AW-512	3	3"				0.216		
		505502-F		6	AW-513	3	2½"				0.203		
					AW-514	1	8"				0.322		
					AW-515	6	5"				0.258		
					AW-516	4	4"				0.237		
					AW-517	7	3"				0.216		
		505502-F		6	AW-518	5	2½"				0.203		
					AW-519	1	8"x8"x4"				322x237		
					AW-520	1	2½"x2½"x2"				203x154		
					AW-521	2	8"x6"				322x280		
					AW-522	1	6"x4"				280x237		
					AW-523	4	5"x4"				258x237		
					AW-524	2	4"x3"				237x216		
					AW-525	2	3"x2"				216x154		
					AW-526	4	3"x1½"				216x145		
					AW-527	3	2½"x2"				203x154		
					AW-528	2	2½"x1½"				203x145		
					AW-529	2	2"x1"				154x133		
	SUPPLY				AW-530	24	2"	150#			—	B16.3	MALLEABLE IRON
				4,5	AW-531	25	1½"				—		
					AW-532	15	1"				—		
				2	AW-533	10	¾"				—		
					AW-534	56	½"				—		
					AW-535	6	⅜"				—		
				2	AW-536	5	¼"				—		
	505503				AW-537	2	1"x½"				—		
					AW-538	2	¾"x½"				—		
	SUPPLY				AW-539	3	2"				—		
				2	AW-540	2	1½"				—		
					AW-541	22	1"				—		
					AW-542	2	¾"				—		
	505503				AW-543	1	2"x2"x½"				—		
					AW-544	1	2"x1½"x2"				—		
		505503-F		6	AW-545	3	1½"x1½"x½"				—		
					AW-546	1	1½"x¾"x1½"				—		
					AW-547	2	¾"x½"x¾"				—		
					AW-548	1	2"x1"x2"				—		
					AW-549	2	2"x1½"				—		
	SUPPLY			6	AW-550	6	2"x1"				—		
	505503				AW-551	2	1"x¾"				—		
	SUPPLY				AW-552	1	¾"x½"				—		
					AW-553	16	2"	300#			—		
				2	AW-554	20	1½"				—		
					AW-555	7	1"				—		
				2	AW-556	10	¾"				—		
					AW-557	37	½"				—		
					AW-558	2	⅜"				—		
				2	AW-559	5	¼"				—		
	505508				AW-560	1	4"	150#			—		CAST STEEL
					AW-561	3	3"				—		
					AW-562	1	2"	150#			—		BRONZE
					AW-563	1	1½"				—		
					AW-564	2	½"				—		
	505520				AW-565	1	¾"	150#			—		BRONZE - [illegible]
	UAO			8	AW-566	2	2½"	150			0.600	B36.10	STEEL-BRONZE
	505507				AW-567	2	10"	150#			—	—	NEOPRENE
	500087			~~4,5~~ 6	AW-568	1	5"						
	505525				AW-569	10	½"						
2	SUPPLY				AW-570	2	2½"	250#			—	—	BRONZE
4					AW-571	4	4"			60	0.276	B16.9	SEAM STEEL
5				3,6,7	AW-572	17	2"	3000#			0.337	B16.11	FORGED STEEL
4	UAO			6	AW-573	8	2½"	X HVY			—	—	STEEL
3					AW-574	3	2"				—	—	
	~~RES.~~			6	~~AW-575~~	~~2~~	~~4"~~						
	~~RES.~~			6	~~AW-576~~	~~2~~	~~2"~~						20.4' STEEL RT
20	SUPPLY			6	AW-577	23	½"	3000#			—	B16.11	FORGED STEEL
2	505502-B			1	AW-578	2	3½"x3½"x2			80	318x218	B16.9	SEAM. STEEL
	SUPPLY			2	AW-579	5	½"	150#			—	B16.3	MALLEABLE IRON
	SUPPLY			2	AW-580	10	1¼"				—		
	SUPPLY			2	AW-581	5	1¼"	300#			—		
	505503-B			2	AW-582	1	1½x1¼	150#			—		
	505503-B			2	AW-583	1	1¼x¾x¼				—		
	505515			2	AW-584	10	5"x1"	3000#			—	—	FORGED ST'L
	505505	505505-B		2,4,6,10	AW-585	8	5"x½"				—	—	
	505508-A			2	AW-586	1	¼"				—	—	
	50005			2,6	AW-587	1	¼"	300#			—	—	BRONZE
	505502-A	505502-J		2,7	AW-588	4	4"				—	—	WROT. STEEL
	SUPPLY			2	AW-589	5	1½"			40	0.237	B16.9	SEAM. STEEL
	SUPPLY			2	AW-590	3	6"	150#			—	B16.3	MALLEABLE IRON
	+ UAO			2	AW-591	2	6"			40	.280	B16.9	SEAM. STL
	505515			2	AW-592	2	3"x½"						STEEL
	505503-B			2	AW-593	1	2"x2"x1¼	3000#			—	—	FORGED STEEL
	505505			2	AW-594	1	2"x½"	150#			—	B-16.3	MALLEABLE IRON
	505503-B			2	AW-595	2	½"	3000#			—	—	FORGED STEEL
	505503-B	505503-C		3,3	AW-596	4	1½"x1"				—	—	
	505503-B			2	AW-597	1	1½x1½x¾	150#			—	B-16.3	MALLEABLE IRON
	505503-B	505503-F		2,6	AW-598	3	¾x½"				—		
	505503-F			2,6	AW-599	1	½"				—	B16.15	BRONZE
	505502-B			2	AW-600	1	6"x3"	3000#			—	—	FORGED STEEL
	505505-A			2	AW-601	1	6"x1"			40	280x216	B16.9	SEAM STL
	SUPPLY			6	AW-602	4	1½"x½"	3000#			—	B16.11	FORGED STL
	SUPPLY			2,4,6	AW-603	8	1½"	3000#			—		
	505505-A			2	AW-604	2	3"x1"	3000#			—	B16.11	FORGED STL
	UAO	UAO-50112		2,7	AW-605	5	6"	3000#			—	—	FORGED STL
				2,4,7	AW-606	62	5"	STD			—	—	STEEL
				2,4,7,8	AW-607	85	3"				—	—	STEEL
	505503-C			2	AW-608	1	1"	76	284		—	—	STEEL
	505503-C			2	AW-609	1	½"	3000#			—	—	FORGED STL.

*NECESSARY STEEL FOR THE

LIST OF FITTINGS

STRUCTURAL MODULAR UNIT APPLICATION

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH. NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. NO. 1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
SUPPLY				4	W-500	29	6"	1325	430	80	0.432	B16.9	SEAMLESS STEEL	A234 GR WPB	90° ELBOW L.R. BUTT WELD	MAIN & AUX FEED	NOS. 90-93	TUBE TURN PT #2
				4	W-501	16	4"				0.337							#2
505502					W-502	6	3"			160	0.438							#43
	505502-C			4	W-503	8	6"x5"			80	.432x.375				90° REDUCING ELBOW L.R.			#2-R
SUPPLY					W-504	12	3"	125	289	40	0.216				90° ELBOW L.R.			#1
					W-505	4	2½"				0.203							#1
505502					W-506	1	2½"x2"				.203x.154				90° REDUCING ELBOW L.R.			#1-R
					W-507	1	3"				0.216				45° ELBOW L.R.			#5
					W-508	3	2½"				0.203							#5
	505502-C			4	W-509	10	6"	1325	430	80	0.432				TEE			#21
					W-510	2	4"				0.337							#21
	505502-C			4	W-511	8	3"			160	0.438							#47
					W-512	3	3"	125	289	40	0.216							#20
					W-513	1	6"x6"x3"	1325	430	80	.432x.300				REDUCING TEE			#23
					W-514	1	3"x3"x2½"	125	289	40	.216x.203							#22
					W-515	1	3"x3"x2"				.216x.154							#22
					W-516	1	2½"x2½"x2"				.203x.154							#22
					W-517	1	2½"x2½"x1½"				.203x.145							#22
					W-518	1	6"x5"	1325	430	80	.432x.375				CONC. REDUCER			#91
					W-519	4	6"x4"				.432x.337							#91
505502-G					W-520	2	3"x1½"			160	.438x.281							#85
505502					W-521	1	3"x2½"	125	289	40	.216x.203							#90
					W-522	1	3"x2"				.216x.154							#90
	505502-F			7	W-523	3	2½"x1½"				.203x.145							#90
505503					W-524	10	1½"	1325	552	6000#	—	B16.11	FORGED STEEL	A234	90° ELBOW - SOCKET WELD			BONNEY FORGE
SUPPLY				6	W-525	5	2"	1325	430	3000#	—							
					W-526	2	1½"				—							
					W-527	6	1¼"				—							
					W-528	12	¾"				—							
				6	W-529	30	½"				—							
505503					W-530	22	1"x½"				—							
					W-531	2	¾"x½"				—							
SUPPLY				5	W-532	10	1"				—				- SOCKET WELD			
				8	W-533	34	½"				—				- SCR'D			
					W-534	1	2"	125	289	150#	—	B16.3	MALLEABLE IRON	A-197				FLAGG FIG. #1001
					W-535	6	1½"	1325	430	3000#	—	B16.11	FORGED STEEL	A 234	TEE - SOCKET WELD			BONNEY FORGE
					W-536	1	1¼"				—							
					W-537	1	1"				—							
					W-538	2	¾"				—							
					W-539	7	½"				—							
				5	W-540	3	1"				—				- SOCKET WELD			
					W-541	18	½"				—				- SCR'D			
					W-542	1	1½"	125	289	150#	—	B16.3	MALLEABLE IRON	A-197				FLAGG FIG. #1021
					W-543	3	½"				—							#1021
					W-544	3	2"				—	—			UNION - SCRD. BRZ. TO IRON SEAT			#1601
					W-545	4	¾"	1325	430	3000#	—	—	FORGED STEEL	A105	- SOCKET WELD			BONNEY FORGE
					W-546	19	½"				—	—						
					W-547	16	½"				—	—			- SCRD.			
					W-548	2	2"				—	B16.11		A234	COUPLING - SOCKET WELD			
505503					W-549	1	2"x1"				—				RED. COUPLING -			
					W-550	2	1½"x1"				—							
505508					W-551	2	½"	1325	552	1500#	—	—	CAST STEEL	A216 GR WCB	S.W. "Y" TYPE STRAINER - [illegible]			MULLER FIG. # 864
505525				5	W-552	1	½"	125	289	150#	—	—			SIGHT FLOW INDICATOR CYLINDER GLASS - SEMI ENCLOSED		1174	ERNST GAGE CO. FIG. TC-10
UAO				5	W-553	1	1½"			150#	—	—	STEEL	—	RGD. HOSE ADAPTER - DET. 2-A" IT. "B: DET. 2-E FIG. 3: DET. 2-C		W/CAP & CHAIN	BETH STD EF-345
505511	505511-A			4	W-554	44	6"	1325	552	—	—	—		SAE-1020	TYPE "A" CHILL RING FOR SCH. 80 PIPE			EF-358 FIG. 13
				4	W-555	74	6"			—	—	—			"B"			
				4	W-556	28	4"			—	—	—			"A"			
				4	W-557	30	4"			—	—	—			"B"			
					W-558	6	3"			—	—	—			"A" 160			
	505511-A			4	W-579	19	3"			—	—	—			"B"			
505508-B				1	W-559	8	1½"	1325	552	6000#	—	B16.11	FORGED STEEL	A-105	LATERAL - SOCKET WELD		NOS. 90-93	BONNEY FORGE
505508-H	505507-C	SUPPLY		2+3,6	W-560	7	1½"x¾"x½"				—				RED. INSERT			
505508-B				1	W-561	2	1½"x1½"x¾"				—				RED. TEE			
* UAO				2	W-562	6	—	—	—	—	—	—	16.3# STL PT.	ABS GR-A	GUSSET PLATE			
* UAO				2	W-563	2	—	—	—	—	—	—			OVERBOARD DISCH. DOUBLER PT 8" DIA			SEE DET "7-A" REF #5
505502-C				4,5	W-564	4	4"x2"	1325	552	160	.531x.344	B16.9	SMLS STL	A234 GR WPB	CONC. REDUCER BW		NOS. 90-93	TUBE TURN PT # 85
Supply				4,5	W-565	2	¾"	125	289	3000#	—	B16.11	FORGED STL	A 234	TEE S.W.		NOS. 90-93	BONNEY FORGE
500087				4	W-566	2	4"	1325	552	—	—	—	—	—	FLOW NOZZLE			SUPPLIED BY CENTRAL CONTROL MANUFACTURER
505511-A				4	W-567	6	5"	1325	552	—	—		STEEL	A576 1020	TYPE "A" CHILL RING FOR SCH 80 PIPE			BETH STD EF-358 FIG 12
505502-C	505502-D			4,5	W-568	11	6"			80	.432	B16.9	SMLS STL	A234 GR WPB	45° ELBOW LR BW		NOS. 90-93	TUBE TURN PT # 6
				4	W-569	1	2½"x1½"			160	.375x.281				CONC. REDUCER BW			#85
				4	W-570	1	5"x2"				.438x.344				90° RED. ELL. B.W. L.R.			#43
SUPPLY				4	W-571	1	2"			3000#	—	B16.11	FORGED STL	A234	TEE - SOC. WELD			BONNEY FORGE
505511-A				4	W-572	2	2½"						STEEL	A576 1020	TYPE "A" CHILL RING FOR SCH 160 PIPE			BETH STD EF-358 FIG 13
505505-A				2	AW-610	1	5"x¾"	76	284	3000#	–	–	FORGED STL	A-105	THREADOLET (I.P.S. RUN & OUTLET)	CONDENSATE & DRAIN TRANSFER	NOS. 170, 90-93	BONNEY FORGE
505505-A				2	AW-611	1	5"x1¼"				–	–			[illegible]			
Supply				4,5	AW-612	1	½"				–	B16.11		A 234	RED TEE SOC. WELD	MIXING TANK PRESSURE GAGE & DRAIN TRANSFER	NOS. 90-93	
505505-D				4,6	AW-613	2	5"x½"				–	–		A 105	THREDOLET (IPS RUN & OUTLET)		NOS. 170, 90-93	
SUPPLY				4	AW-614	1	1½"				–	B16.11		A234	TEE - SOC. WELD		NOS. 90-93	
				4	AW-615	1	1½"x1"				–				RED INSERT			
				4	AW-616	1	2"				–	–		A 105	SCR'D UNION			
UAO				4	AW-617	1	2"				–	–	GALV. FORGED STL		FUNNEL			
				4,10	AW-618	1	—				–	–	—		FUNNEL CVR. FOR AW-617 - STD. EXCEPT FOR 1" NOM. [illegible]			BETH STD EF-358-A TY 14
505502-C				4	AW-619	1	4"			40	.237	B16.9	SMLS STL.	A234 GR. WPB	45° ELBOW L.R.		NOS. 90-93	TUBE TURN PT # 5
UAO				5,7	AW-620	24	8"			—	—	—	STEEL	A519 GR 1015 HR	WELDING SLEEVE			EF-496 FIG. 1
UAO				5,6,7,9	AW-621	44	2½"			—	—	—		A53 TYPE [illegible] GR B				
UAO				5	AW-622	1	2½"			—	—	—	STL GALV.	A525	FUNNEL			BETH STD EF-555-ATK
UAO				5,10	AW-623	1	2½"			—					FUNNEL COVER FOR AW-622 - [illegible] 1½" I.P.S. PIPE			
505505-C				6	AW-624	1	8"x1¼"			3000#	—	—	FORGED STL	A105	LATROLET (IPS - RUN x THR'D - OUTLET)		NOS. 170, 90-93	BONNEY FORGE
505505-C				6	AW-625	2	8"x1"				—	—			THREDOLET (I.P.S. - RUN x THR'D - OUTLET)		NOS. 170, 90-93	
UAO				6	AW-626	1	2½"			150#	—	—	BRONZE	B62	SPEC. FLANGE			BETH STD. - BS-2-UC
SUPPLY				6	AW-627	1	2"x1"			600#	—	—	FORGED STL	A105	BUSHING SCR'D		NOS. 90-93	BONNEY FORGE
UAO				4,6	W-573	7	¾"	1325	552	–	–	–	STEEL	A105	BOSS - SOC. WELD	MAIN & AUX FEED		BETH STD EF-358 FIG 8
SUPPLY				4	W-574	1	2"	125	289	40	.154	B16.9	SMLS. STL	A234 GR WPB	90° ELBOW LR. B.W.		NOS. 90-93	TUBE TURN PT # 1
505502-D				4,5	W-575	1	5"x2"	1325	552	160	.438x.344				CONC. REDUCER B.W.			TUBE TURN PT # 85
UAO				4,5	W-576	13	½"			–		–	STEEL	A105	BOSS - SOC. WELD			BETH STD EF 358 FIG 8
UAO				4,5,6	W-577	2	2"											
UAO				4,5	W-578	3	1"	1325	552	–	–	–	STEEL	A105	BOSS - SOC. WELD			BETH STD. EF 358 FIG 8
505511-A				4	W-580	6	2"			–	–	–		A576 1020	TYPE "A" CHILL RING FOR SCH 160 PIPE			
	505511-B			4,5	W-581	3	1½"			–	–	–						
UAO				5	W-582	2	½"							A105	BOSS - SCR'D			9
500001				5	W-583	2	1½"								STRAINER - SCR'D			VENDOR FURNISHED
505503-E				6	W-584	4	1½"x1"	1325	552	6000#	–	B16.11	FORGED STL	A105	INSERT - S.W. x SCR'D		NOS. 90-93	BONNEY FORGE
505503-E				5	W-585	5	1"			3000#	–	—			UNION SOCK WELD			
505503-E				5	W-586	2	1½"x1½"x1"			3000#	–	B16.11			REDUCING TEE - SOC - WELD			
UAO				5,9	W-587	4	1"			—			STEEL		BOSS - SCRD	MAIN & AUX FEED - TEST THER.		EF 358 FIG. 9
UAO				5	W-588	1	¾"											
505502-D				5	W-589	1	5"x3½"x2½"			160	.438x.375	B16.9	SEAMLESS STL	A234 GR. WPB	TEE, REDUCING B.W.		NOS. 90-93	TUBE TURN PT. #28
UAO				5	W-590	2	1¼"						STEEL	A105	BOSS - SOC. WELD	RECIR.		BETH STD EF 358 FIG. 9

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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-11-3

FRAME 3 OF 5

LIST OF FITTINGS

E NO. (RE USE)	ALT NO.	FITTING IDENT. NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
	6	W-591	2	1/2"	1325	552			B16.11	FORGED STL		"Y" STRAINER - SOC WELD			
	6	W-592	1	2"	↓	↓	1500#	0.625"	—	STN. STL	TY-316	ORIFICE 7/16" DIA. HOLE TY "A" 5/8" THK	MAIN & AUX FEED DISCH.		BS-2-UF
	6-7	W-593	3	2"×1 1/2"	125	289	40	—	B16.9	SEAMLESS STL.	A234 GR WPB	CONCENTRIC REDUCER	↓	NOTES 90-93	TUBE TURN PT #90
	6	W-594	2	1"×3/4"			3000#		B16.11	FORGED STL.	A105	RED. INSERT S.W.		NOTES 90-93	BONNEY FORGE
	6,8	W-595	1	1 1/2"			80	0.200		STL. BLK.	A53 TY-E GR B	~~PIPE NIPPLE - DET "6A" ITEM #8~~			~~BETH. STD. EF 345~~
	6-7	AW-628	32	4"	76	284	—	—	—	STEEL	[illegible]	WELDING SLEEVE			EF-496 FIG. 1
	6	AW-629	2	1/4"			3000#	—	—	FORGED STL.	A105	PIPE PLUG SQ. HD. THRD		NOTES 90-93	BONNEY FORGE
	6	AW-630	1	3 1/2"×1/4"			3000#	—	—	FORGED STL	A105	LATROLET (IPS × THRD OUTLET)		173, 90-93	BONNEY FORGE
	6	AW-631	2	1/4"			3000#	—	B16.11		A234	90° ELBOW SOCKET WELD		90-93	
	6	AW-632	4	3/4"			3000#	—			↓	↓			
	6	AW-633	4	2"			3000#	—	↓		↓	TEE - SOCKET WELD		↓	
	6	AW-634	1	2 1/2"×1/2"			3000#	—	—		A105	SOCKOLET (IPS RUN & OUTLET)		171, 90-93	
	6,8	AW-635	2	2"×1"			3000#	—	B16.11		↓	RED INSERT S.W.		90-93	
	6	AW-636	2	3/4"×1/2"			3000#	—	B16.11	↓	A234	REDUCER - SOCKET WELD		↓	↓
	6	AW-637	2	1/2"			150#	—	—	STN. STL.	TY-316	ORIFICE PL 1/8" DIA HOLE 3/8" THK. TYPE "A"			BS-2-UF
	6	AW-638	2	1/2"			300#	—	—	↓	↓	↓			↓
	6	AW-639	1	2"×1/2"			3000#	—	B16.11	FORGED STL	A105	REDUCING INSERT - SOCKET WELD		NOTES 90-93	BONNEY FORGE
	6-9	AW-640	2	1 1/2"×1/2"×1 1/4"	↓	↓	150#	—	B16.3	M.I.	A197	REDUCING TEE SCRD.		NOTES 90-93	FLAGG FIG. 1021
	7	AW-641	1	2"	—	—	—		—	CARBON STL.	A53 TY "E" GR B	PIPE SLEEVE BETH. FIG. No 1			BETH STD EF496
	8	AW-642	1	1/2"×1/4"	125	289	—	—	—	BRASS	B-16	1/2" MPT. × 1/4" O.D.T. MALE CONNECTOR		NOTES 176, 90-93	SWAGELOK # B-400-1-8
	8	AW-643	3	2"×1"×2"			3000#	—	B16.11	FORGED ST'L	A-105	2" S.W. × 1" F.P.T. × 2" S.W. TEE	(MAY BE FURNISHED BUSHED AT SCR'D END	NOTES 90-93	BONNEY FORGE
	8	AW-644	2	1"×3/4"			↓		↓	↓	↓	BUSHING SCR'D		↓	↓
	7	W-597	2	2 1/2"×2"	125	289	40	[illegible]	B16.9	SEAMLESS STL	A234 GR WPB	CONCENTRIC REDUCER BW	FEED PUMP RECIRC. LINE		TUBE TURN PT. #90
	7	W-598	2	2"	↓	↓	↓	.154		↓	↓	TEE BUTT WELD			#1
	7	W-599	15	3"	—	—	—			CARBON STL	A53 TY "E" GR B	PIPE SLEEVE BETH FIG No 1			BETH STD EF-496
	7	W-600	12	2 1/2"	—	—	—								
	7	W-601	16	2"	—	—	—								
	7	W-602	1	1 1/2"	—	—	—			↓	↓	↓	↓		↓
	8	W-603	1	2"×1 1/2"	—	—	3000#			FORGED ST'L	A-105	REDUCING INSERT SOCK. WELD		NOTES 90-93	BONNEY FORGE
	8	W-604	1	1 1/2"	125	289	—			STEEL/BRZ	A-105/B-62	FLG'D HOSE ADAPTER W/CAP & CHAIN DET. "6-A" ITEM #8, DET. "6-B" FIG #8 W/FLG. W-706 (1500#) & DET "6-C"	BOILER WASHDOWN & MISCEL. SERV. HOSE CONN.		B.S. EF-345
	8	W-605	4	1/2"×1/4"			3000#	—	B16.11	FORGED STL.	A-105	SCR'D REDUCING BUSHING		NOTES 90-93	BONNEY FORGE
	8,9	W-606	2	1/2"×1/4"			3000#	—	↓	FORGED STL.	A-105	ADAPTER - 1/2" F-NPT × 1/4" M-NPT		↓	CAJON-S-8-RA-4
	9	W-607	2	—			—	—	—	—	—	2 BOTTLE CO_2 SYSTEM	FOR BOILER WATER ANALYZERS	SEE NOTE #96	—
	9	W-608	2	1 1/2"	1325	552	3000#	—	B16.11	FORGED STL.	A-105	45° ELBOW - SOCK. WELD			BONNEY FORGE
	9	W-609	1	1"	↓	↓	—	—	—	STAINLESS STL.	A240-GR.316	ORIFICE PLATE - (1/2" DIA. HOLE - TYPE "A"	3/8" THICK) 1500# L-5 1/2"		BETH. STD. BS-2-UF
	8	AW-645	1	[illegible]			3000#	—	B16.11	FORGED ST'L	A-105	THREADOLET IPS RUN & OUTLET		NOTES 90-93	BONNEY FORGE
	9	AW-646	1	—	—	—	—	—	—	COP. NI.	—	COOLING COIL	BOILER WATER ANALYZER	—	—
	9	AW-647	10'	3×3×1/4	—	—	—	—	—	STEEL	ABS GR. A	ANGLE	FOUN. FOR AQUAMATE TEST STATION CABINET	DET. "3-B" M-4650-111-	22 —
	9	AW-648	4	3/4"	76	284	3000#	—	B16.11	↓	A-105	PIPE COUPLING - SCR'D	MAIN CONDENSER GAGE GLASS EXTENSIONS	NOTES 90-93	BONNEY FORGE
	9	W-610	4	1"			6000#		B16.2.1	FORGED STL.	A-105	PLUG - SCR'D	BOILER FLUSHING	NOTES 90-93	BONNEY FORGE
	9	W-611	2	1 1/2"×1 1/2"×1"			↓		↓	↓	↓	REDUCING TEE - SCR'D	↓	↓	↓
	[illegible]	AW-649	2	8"×1/2"	76	284	3000#		B16.11	FORGED STL	A-105	THREDOLET (I.P.S. RUN × THR'D OUTLET)	MAIN FEED SUCT. REL VALVE (RV-1) CONNS.	NOTES 90-93	BONNEY FORGE
	[illegible]	AW-650	2	1/2"	—	—	—			STEEL	—	FUNNEL SCR'D	FILL LINE TO SEPERATOR TANK ON VACUUM PUMPS		BETH STD EF-355-A-TY-4
	[illegible]	AW-651	1	4"	76	284	150#			STEEL	A-53	FLANGED PIPE DAMPER	EXHAUSTER FAN		BETH STD. EF-481

SEND DETAIL

PIPING PACKAGE UNIT APPLICATION

UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

UNIT	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT	UNIT #7	UNIT #8	UNIT	UNIT	UNIT	UNIT	UNIT 15
						20						
						8	8					
						6						
						5						
						6						
						4						
						1						
						3						
						10						
						1	1					
						5						
						1						
						1						
						1						
						1						
						1						
						1						
						4						
						1						
						1						
						3						
		2	1									
						5						
												2
						6						
						11						
						10	20					
		8	11			7	8					
						1						
						1						
						2						
						2	1					
		1	1									
						1						
						1						
						3						
						4						
							17					
		3	5			2	4					
							1					
						44						
						74						
						16	12					
						16	14					
						6						
						18						
		4	4									
		4	3									
		1	1									
		3	3									
		1	1									
						2	2					
							2					
						1	1					
						6						
						11						
						1						
						1						
						2						
	1											
	1											
							1					
	2											
							1					
							1					
							1					
						16						8
						14	5					26
												1
												1
												1
												2
												1
												1
						7						
						1						
						9	4					
						2						
						3						
						4	2					
						3						
						2						
												2
												2
												4
												2
						3	1					
						1						
						1						

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FRAME 4 OF 5

LIST OF FITTINGS

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT	UNIT	UNIT 7	UNIT 8	REQUISITION NO.	REQUISITION NO.	CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	
							2	500041			6	W-591	2	½"	1325	552			B16.11	FORGED STL.		'Y' STRAINER - SOC WELD	
						1		UAO			6	W-592	1	2"	↓	↓	1500#	0.625"	—	STN. STL.	TY. 316	ORIFICE 7/16" DIA. HOLE TY "A" 5/8" THK	MAIN & AUX. FEED
						5		505502-F	505502-J		6,7	W-593	5	2"×1½"	125	289	40	—	B16.9	SEAMLESS STL.	A234 GR WPB	CONCENTRIC REDUCER	↓ ↓
						2		SUPPLY			6	W-594	2	1"×¾"			3000#		B16.11	FORGED STL.	A105	RED. INSERT S.W.	
								UAO			6,8	~~W-595~~	~~1~~	~~1½"~~			80	0.200		STL. BLK.	A53 TY-E GR B	~~PIPE NIPPLE - DET "6A" ITEM #8~~	
4	4		7			17		↓			6,7	AW-628	32	4"	76	284	—	—	—	STEEL	A53 TY-E GR B	WELDING SLEEVE	
						2		SUPPLY			6	AW-629	2	½"			3000#	—	—	FORGED STL.	A105	PIPE PLUG SQ. HD. THRD.	
	1							505505-D			6	AW-630	1	[illegible]×1½"			3000#	—	—	FORGED STL.	A105	LATROLET (IPS × THRD OUTLET)	
						2		SUPPLY			6	AW-631	2	½"			3000#	—	B16.11		A234	90° ELBOW SOCKET WELD	
						4					6	AW-632	4	¾"			3000#	—				↓ ↓ ↓	
						4		↓			6	AW-633	4	2"			3000#	—	↓		↓	TEE - SOCKET WELD	
						1		505505-D			6	AW-634	1	2½"×½"			3000#	—	—		A105	SOCKOLET (IPS RUN & OUTLET)	
						2		505503-F			6,8	AW-635	2	2"×1"			3000#	—	B16.11			RED. INSERT S.W.	
						2		SUPPLY			6	AW-636	2	¾"×½"			3000#	—	B16.11	↓	A234	REDUCER - SOCKET WELD	
						2		UAO			6	AW-637	2	½"			150#	—	—	STN. STL.	TY. 316	ORIFICE PL ⅛" DIA HOLE ⅜" THK. TYPE "A"	
						2		↓			6	AW-638	2	½"			300#	—	—	↓	↓	↓ ↓ ↓ ↓	
						1		505503-F			6	AW-639	1	2"×½"			3000#	—	B16.11	FORGED STL	A105	REDUCING INSERT - SOCKET WELD	
1						1		↓	505503-N		6,9	AW-640	2	1½"×½"×1½"	↓	↓	150#	—	B16.3	M.I.	A197	REDUCING TEE SCR'D.	
						1		UAO			7	AW-641	1	2"	—	—	—	-	-	CARBON STL.	A53 TY 'E' GR B	PIPE SLEEVE BETH. FIG. No 1	
							1	505503-H			8	AW-642	1	½"×¼"	125	289	-	-	-	BRASS	B-16	½" MPT. × ¼" O.D.T. MALE CONNECTOR	
						3		505503-G			8	AW-643	3	2"×1"×2"			3000#	-	B16.11	FORGED ST'L	A-105	2" S.W. × 1" F.P.T. × 2" S.W. TEE	(MAY BE FURNISHED
						2		505503-G			8	AW-644	2	1"×¾"			↓	-	↓	↓	↓	BUSHING SCR'D	
						2		505502-J			7	W-597	2	2½"×2"	125	289	40	.203 × .154	B16.9	SEAMLESS STL	A234 GR WPB	CONCENTRIC REDUCER BW	FEED PUMP REC
						2		505502-J			7	W-598	2	2"	↓	↓	↓	.154		↓ ↓	↓	TEE BUTT WELD	
						15		UAO			7	W-599	15	3"	—	-	-	-	-	CARBON STL	A53 TY 'E' GR B	PIPE SLEEVE BETH FIG No 1	
						12		UAO			7	W-600	12	2½"	-	-	-	-	-				
						16		UAO			7	W-601	16	2"	-	-	-	-	-				
						1		UAO			7	W-602	1	1½"	-	-	-	-	-	↓ ↓	↓	↓ ↓ ↓ ↓	↓
						1		505503-H			8	W-603	1	2"×1½"	-	-	3000#	-	-	FORGED ST'L	A-105	REDUCING INSERT SOCK. WELD	
						1		UAO			8	W-604	1	1½"	125	289	-	-	-	STEEL/BRZ	A-105/B-62	RG'D HOSE ADAPTER W/CAP & CHAIN DET. "6-A" ITEM #8, DET. "6-B" FIG #3 W/FLG. W-706 (1500#) & DET "6-C"	BOILER WASHDOWN & MI
												—						-					
							4	505503-H			8	W-605	4	½"×¼"			3000#	-	B16.11	FORGED ST'L.	A-105	SCR'D REDUCING BUSHING	
							2	505503-H			8,9	W-606	2	½"×¼"			3000#	-	↓	FORGED STL.	A-105	ADAPTER - ½"F-NPT × ¼"M-NPT	
							2	500043-D			9	W-607	2	—			—	—	—	—	—	2 BOTTLE CO_2 SYSTEM	FOR BOILER WATER ANA
						2		505503-M			9	W-608	2	1½"	1325	552	3000#	—	B16.11	FORGED STL.	A-105	45° ELBOW - SOCK. WELD"	
						1		UAO-50112			9	W-609	1	1"	↓	↓	—	—	—	STAINLESS STL.	A240-GR.316	ORIFICE PLATE - (½" DIA. HOLE - TYPE "A"	⅜" THICK) 1500# L-5½
						1		505505-E			8	AW-645	1	2"×1"			3000#	-	B16.11	FORGED ST'L	A-105	THREADOLET IPS RUN & OUTLET	
							1	500044			9	AW-646	1	—	—	—	—	—	—	COP. NI.	—	COOLING COIL	BOILER WATER ANAL
							10'				9	AW-647	10'	3"×3"×¼"	—	—	—	—	—	STEEL	ABS GR. A	ANGLE	FOUN. FOR AQUAMATE T
	4							SUPPLY			9	AW-648	4	¾"	76	284	3000#	—	B16.11	↓	A-105	PIPE COUPLING - SCR'D	MAIN CONDENSER GAGE
		1	1			1	1	507503-K			9	W-610	4	1"			6000#		B16.2.1	FORGED STL.	A-105	PLUG - SCR'D	BOILER FLUSHING
		1	1					↓			9	W-611	2	1½"×1½"×1"			↓		↓	↓ ↓	↓	REDUCING TEE - SCR'D	↓ ↓
						2		505505-J			10	AW-649	2	8"×½"	76	284	3000#		B16.11	FORGED STL.	A-105	THREDOLET (I.P.S. RUN × THR'D OUTLET)	MAIN FEED SUCT. REL
1	1							UAO			10	AW-650	2	½"	—	—	—		—	STEEL	—	FUNNEL SCR'D	FILL LINE TO SEPARATOR T
								UAO 50112			10	AW-651	1	4"	76	284	150#			STEEL	A-53	FLANGED PIPE DAMPER	EXHAUSTER FAN

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-372-11-3

FRAME 5 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-373-06-1

NOV 1980 10X

FRAME 1 OF 2

LIST OF PIPES

REQUISITION NO			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	AMOUNT REQ'D. GALV.	AMOUNT REQ'D. TOTAL	SIZE	SCH NO.	WALL THK.	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	SERVICE	U.S.C.G. CLASS	HYDRO TEST PRESS	SPECIAL NOTES FROM REF.#1
[illegible]				1	L-1	2'-0"	—	2'-0"	12"	40	.406"	75	120	B36.10	SEAMLESS STEEL PIPE	A-53,GR.B-TY.S		II		NOS. 128,135
					L-2	1'-0"	—	1'-0"	10"		.365"									
					L-3	3'-0"	—	3'-0"	8"		.322"									
					L-4	2'-0"	—	2'-0"	6"		.280"									
	507544-H			1	L-5	120'-0"	—	120'-0"	5"		.258"									
	507399-JX	507399-J		1	L-6	80'-0"	—	80'-0"	4"		.237"									
1X	507544-D			1,4	L-7	217'-0"	—	217'-0"	3"		.216"									
	507544-F			4,5	L-8	260'	—	260'	2½"		.203"									
1X				4,5	L-9	248'	—	248'	2"		.154"									
1X	507544-D	507544-F		4,5,6	L-10	610'	—	610'	1½"		.145"									
	507544-F			5	L-11	38'	—	38'	1¼"		.140"									
					L-12	240'-0"	—	240'-0"	1"		.133"									
	507544-D			4	L-13	85'-0"	—	85'-0"	¾"		.113"									
	507544-D	507544-F		3,4,6	L-14	111'-0"	—	111'-0"	½"		.109"									
					L-15	20'-0"	—	20'-0"	⅜"		.091"									
					L-16	90'-0"	—	90'-0"	¼"		.088"									
					L-17	1'-0"	—	1'-0"	1"	80	.179"									
				6	L-18	6'-0"	—	6'-0"	¾"		.154"									
					L-19	10'-0"	—	10'-0"	⅜"		.126"									
					L-20	1'-0"	—	1'-0"	¼"		.119"									
[illegible]					L-21	—	—	3'-0"	½" I.P.S.	—	.065"			—	SEAMLESS COPPER PIPE	B75				NOS. 128
507399-B				1	L-22	10'-0"	—	10'-0"	1½"	80	.200			B36.10	SEAMLESS STEEL PIPE	A53 GR.B-TY.S				135
[illegible]				1,4	L-23	4'-0"	—	4'-0"	3½"	40	.226									

LIST OF VALVES

REQUISITION NO			CODE NO. (FUTURE USE)	ALT NO.	VALVE IDENT.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	PRESS STD.	ANSI DIM. STD.	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	TRIM DISC	TRIM STEM	TRIM PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	TYPE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO.
508016-A				5	L-100	1	4"	75	120									FLGD., F.&D.		3-WAY AUTO. CONTROL, WITH MANUAL OVER-RIDE		
507500					L-101	6	2½"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRONZE	BRONZE	—	FLGD., F.&D.	B16.5	GLOBE STOP	NOS. 6,90-93	LUNK'NH'M'R. FIG. 1542
	507500-K			6	L-102	10	2"			600#	—	FORGED STL.	A-105 GR. II	STAIN.STL.	STAIN.STL.	STAIN.STL.	—	SCREWED	B2.1	GLOBE STOP	4,5,90-93	EDWARD FIG. 848
					L-103	1	2"			600#	—	FORGED STL.	A-105 GR. II	STAIN.STL.	STAIN.STL.	—	—	SCREWED		HORIZONTAL LIFT - CHECK	5,90-93	EDWARD 838
					L-104	5	2"			125#	—	BRONZE	B-62	BRONZE	BRONZE	BRONZE	—	SCREWED		QUICK-OPENING, SELF-CLOSING GATE	90-93	POWELL FIG. 362-O
	507500-D	507500-K		4,5	L-105	8	1½"			600#	—	FORGED STL.	A-105 GR. II	STAIN.STL.	STAIN.STL.	STAIN.STL.	—	SCREWED		GLOBE STOP	4,5,90-93	EDWARD FIG. 848
					L-106	5	1½"				—						—			GLOBE STOP-CHECK	4,5,90-93	868
					L-107	1	1¼"				—						—			ANGLE STOP-CHECK	4,5,90-93	869
					L-108	5	1"				—						—			GLOBE STOP (LOCKED CLOSED - SEE GEN. NOTE #1)	4,5,90-93	848
					L-109	6	¾"				—						—			GLOBE STOP (LOCKED CLOSED - SEE GEN. NOTE #1)	4,5,90-93	848
	507500-F			7	L-110	3	1¼"				—					—	—			HORIZONTAL LIFT CHECK	5,90-93	838
					L-111	3	¾"				—					STAIN. STL.	—			GLOBE STOP	4,5,90-93	848
					L-112	15	½"				—						—			GLOBE STOP	4,5,90-93	848
					L-113	1	1¼"				—						—	FLGD., F.&D.	B16.5	ANGLE STOP-CHECK	4,5,90-93	847
					L-114	7	¼"				—						—	SCREWED	B2.1	GLOBE STOP	4,5,90-93	848
				6	L-115	2	1"			200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCRD. & HOSE END	B2.1/B2.4	HOSE GATE VALVE WITH CAP & CHAIN	1,39,90-93	POWELL FIG. 375-M
					L-116	1	½"			600#	—	FORGED STL.	A-105 GR. II	STAIN.STL.	STAIN.STL.	STAIN.STL.	—	SCREWED	B2.1	GLOBE STOP-CHECK	4,5,90-93	EDWARD FIG. 868
				7	L-117	2	3"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRONZE	BRONZE	—	FLGD., F.&D.	B16.5	GATE (LOCKED OPEN - SEE GEN. NOTE #1)	2,6,90-93	LUNK'NH'M'R. FIG. 1502
					L-118	1	1"			600#	—	FORGED STL.	A-105 GR. II	STAIN.STL.	STAIN.STL.	STAIN.STL.	—	SCREWED	B2.1	GATE - FULL PORT	6,90-93	1311
					L-119	2	¾"				—						—			GLOBE STOP-CHECK	4,5,90-93	EDWARD FIG. 868
					L-120	1	1"				—					—	—			HORIZONTAL LIFT CHECK	5,90-93	838
					L-121	3	1¼"				—					STAIN.STL.	—			GATE - FULL PORT	6,90-93	LUNK'NH'M'R. FIG. 1311
					L-122	1	½"			200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED		GLOBE STOP	1,90-93	POWELL FIG. 110
				7	L-123	1	4"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRONZE	BRONZE	—	FLGD., F.&D.	B16.5	GATE	2,6,90-93	LUNK'NH'M'R. FIG. 1302
507500-B				4,5	L-124	2	5"			150#							—			ANGLE STOP-CHECK	2,6,56,75,90-93,95	POWELL FIG. #1537
				4	L-125	1	4"										—				2,6,90-93	#1537
				4	L-126	3	4"			600#	—	FORGED STEEL	A-105	STAIN.STL.	STAIN. STL.	STAIN. STL.	—	SCREWED	B2.1	GLOBE	4,5,90-93	EDWARDS FIG. #848
500019				4,5	L-127	1	2½"			150#	B16.10	CAST STEEL	A-216 GR.WCB				—	FLGD. F.&D.	B16.5	CONTROL VALVE		LESLIE CLASS DDLS
507500-B				4	L-128	2	1"			600#	—	FORGED STEEL	A-105				—	SCREWED	B2.1	PISTON CHECK VALVE	5,90-93	EDWARDS FIG. 838
507500-C				2	L-129	2	1½"			600#	—		A-105 GR. II				—			GLOBE STOP (LOCKED CLOSED - SEE GEN. NOTE #1)	4,5,90-93	848
				2,7	L-130	6	1"			600#	—						—			GLOBE STOP	4,5,90-93	848
				2,7	L-131	5	¾"			600#	—						—			GATE - FULL PORT	6,90-93	VOGT FIG. 13111
				2,7	L-132	2	1½"			600#	—						—			GATE - FULL PORT	6,90-93	
				2,7	L-133	1	2"			600#	—						—			GATE - FULL PORT	6,90-93	
507500-E				4	L-134	1	1"													SOLENOID VALVE	SEE NOTE NO. 96	
				4	L-135	1	1"													3-WAY SOLENOID VALVE		
507260-A				1,4	L-136	1	4"			150#	B16.10	CAST STEEL	A-216, GR.WCB	BRONZE	BRONZE	—	BRONZE	FLANGED, F.&D.	B16.5	SWING CHECK	NOS. 10, 90-93	POWELL FIG. 1561A F.E.
				4	L-137	1	1½"			600#	—	FORGED STL.	A105	STAIN.STL.	STAIN. STL.	STAIN. STL.	—	SCREWED	B2.1	GLOBE	4,5,90-93,94	VOGT FIG. #12141
				4	L-138	1	1½"				—						—			GATE - FULL PORT	4,6,90-93,94	#13111
				4	L-139	1	1½"				—		A105				—			GLOBE	4,5,90-93	EDWARDS FIG. 848
				4	L-140	1	1½"				—									SWING CHECK	10,	VOGT FIG. 4835
				4	L-141	1	1½"			300#	—	CAST STEEL	A-216 GR.WCB							3-WAY, 3 PORT, 2 POS. PLUG VALVE - REG. PATTERN	29,	ROCKWELL FIG. 4812
				5	L-142	3	⅜"			400#	—			TEFLON						BALL VALVE W/ SPRING RETURN HANDLE		PITTSBURGH SP-E-12[illegible]
507500-J				6	L-143	2	1½"			150#	—	FGD. ST'L.	A-105	STN. ST'L.			—	FLGD., F.&D.	B16.5	GLOBE VLV.		LUNK'NH'M'R. FIG. 1710W

GENERAL NOTES

1- DESIGNATIONS "LOCKED CLOSED" OR "LOCKED OPEN" ARE LISTED FOR YARD/TECHNICAL INFORMATION ONLY - NOT FOR ORDERING PURPOSES. LOCKS AND LOCATIONS ARE PROVIDED ON REF. #2.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	1-11-77		1. ADDED L-124 THRU L-128 & L-22. 2. INC. QTY. OF L-5 (100'-0"-120'-0") L-6 (60'-0"-80'-0") & L-7 (140'-0"-160'-0").	G.L.W.	G.G. SHARP LTR. DATED 5-19-77
2	4-4-77		1. ADDED VALVES L-129 TO L-133.	J.J.P. JR.	
3	4-21-77 4/12/77 5/4/77 5-24-77		1. ADDED L-134 & L-135 2. INCR. THE FOLLOWING L-11 (9'-0"-20'-0") & L-1 (1'-0"-2'-0"). 3. REMOVE RESERV. FROM L-127 4. REVISED QTY OF L-14 (WAS 80'-0") 5. ADDED L-23 AND L-136 THRU L-142 6. REVISED QTY OF L-105 (6 TO 7). 7. ADDED NOTES 56, 75 & 95 TO VALVE L-124	G.L.W. Secc. D.L.B.	G.G. SHARP LTR. DATED 8-1-77
4	9-30-77		1- FOR VALVE L-136 CHANGED THE SIZE FROM 3" TO 4". 2- INCR. THE QTY OF: L-7 (160'-217'), L-8 (200'-206'), L-9 (180'-190'), L-10 (500'-539'), L-13 (60'-85'), L-14 (85'-91') & L-23 (2'-4'). 3- FOR VALVE L-134 & L-135 ADDED NOTE #96 & REMOVED RES. OF SAME.	P.C.G.	10/4/77
5	5/1/78		1- INCR. QTY OF FTG. NOS. L8 (206'-260'), L9 (190'-248'), L10 (539'-609'), L11 (20'-38'), L14 (91'-111'), L18 (2'-6') & L105 (7-8). 2- REMOVED RES. OF L-100. 3- REVISED QTY OF L-102 FROM 9 TO 10	P.C.G. D.L.B.	5/11/78
6	6/28/78		1- ADDED ITEM L-143 & INCR. QTY OF L-10 (609'-610') PER VIS NO 4650-22-155 2- DELETED L-115.	P.C.G.	7/6/78
7	4/10/79		IN VALVE LIST: L-110 INCR. FROM 2 TO 3 AND DELETED VALVES L-117, L-123, L-130 TO L-133 TO SUIT FINAL QUANTITY REQMTS.	J.H.	4/20/79

HULL	DESIGN	CHARGE
4651		8450
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO. 373

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ~ DATE 8-28-76
DRAWN J.J.P. JR. APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. M-4650-373-06-1 ALT. NO. 7

PIPE & VALVE LIST FOR LUBRICATING OIL PIPING

	APPROVAL LETTERS				
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	9-16-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
2	M4650-372-2	ENGINEERS LOCK LIST
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

DATE OF ISSUE

ALTERATION

ENGINEERS DISTRIBUTION: OWNERS, AMERICAN BUREAU, LLOYD'S R.S., U.S.M.A., U.S. NAVY, U.S.C.G., JOINER CONT'R., OWNER'S INSP., AM. BU. INSP., LLOYD'S INSP., U.S.M.A. INSP., U.S. NAVY INSP., U.S.C.G. INSP., HULL DRAFT, MACH. DRAFT, ELEC. DRAFT, OUTFIT DRAFT, ESTIMATING, PRODUCTION, ORDER DEPT., JOINER CONT'R., TOTAL ENG'R. DIST.

YARD DISTRIBUTION: SHIP SUPT., PIECE RATE, TEST DEPARTMENT, GROUND ASSEMBLY, H. LEVY, STRUCT. SUPER., OPTICAL DETAIL, WET DOCK, PIPE SHOP-52, OUTFIT #1 PIER, PIPE DRAFT, BOILER SHOP, OUTSIDE MACH., ELECTRIC SHOP, SHEET MET. SHOP, COPPER SHOP, PAINT SHOP, WELDING, MOLD LOFT-41, BRACKET SHOP, TOTAL YARD DIST.

M-730

15.63 SQ. FT.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-1

FRAME 2 OF 2

LIST OF PIPES

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	PIPE IDENT.	AMOUNT REQ'D. BLK.	GALV.	TOTAL	SIZE	SCH. NO.	WALL THK.	DESIGN CRITERIA P.S.I.	°F	ANSI DIM. STD.	DESCRIPTION	A.S.T.M. SPEC.	
507544				1	L-1	2'-0"	—	2'-0"	12"	40	.406"	75	120	B36.10	SEAMLESS STEEL PIPE	A-53,GR.B-TY.S	
					L-2	1'-0"	—	1'-0"	10"		.365"						
					L-3	3'-0"	—	3'-0"	8"		.322"						
					L-4	2'-0"	—	2'-0"	6"		.280"						
	507544-B			1	L-5	120'-0"	—	120'-0"	5"		.258"						
	507544-1X	507544-B		3	L-6	80'-0"	—	80'-0"	4"		.237"						
1X	507544-D			1,4	L-7	217'-0"	—	217'-0"	3"		.216"						
	507544-F			4,5	L-8	240'	—	240'	2½"		.203"						
1X				4,5	L-9	248'	—	248'	2"		.154"						
1X	507544-D	507544-F		4,5,6	L-10	610'	—	610'	1½"		.145"						
	507544-C			3,5	L-11	38'	—	38'	1¼"		.140"						
					L-12	240'-0"	—	240'-0"	1"		.133"						
	507544-D			4	L-13	85'-0"	—	85'-0"	¾"		.113"						
	507544-D	507544-F		3,4,5	L-14	111'-0"	—	111'-0"	½"		.109"						
					L-15	20'-0"	—	20'-0"	⅜"		.091"						
					L-16	90'-0"	—	90'-0"	¼"		.088"						
					L-17	1'-0"	—	1'-0"	1"	80	.179"						
				5	L-18	6'-0"	—	6'-0"	¾"		.154"						
					L-19	10'-0"	—	10'-0"	⅜"		.126"						
					L-20	1'-0"	—	1'-0"	¼"		.119"						
507545					L-21	—	—	3'-0"	⅛" I.P.S.	—	.065"			—	SEAMLESS COPPER PIPE	B75	
507544-B				1	L-22	10'-0"	—	10'-0"	1½"	80	.200			B36.10	SEAMLESS STEEL PIPE	A 53 GR B-TY. S	
507544-C				3,4	L-23	4'-0"	-	4'-0"	3½"	40	.226						

PIPING PACKAGE UNIT APPLICATION

PIPE IDENT.	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20
L-1																				
L-2																				
L-3																				
L-4																				
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L-18																				
L-19																				
L-20																				
L-21																				
L-22																				
L-23																				

STRUCTURAL MODULAR UNIT APPLICATION

PIPE IDENT.	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #15	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #
L-1															1'-6"										
L-2																									
L-3																									
L-4	2'																								
L-5	40'														35'-0"										
L-6				35'											10'-0"										
L-7	18'		60'	15'					11'						115'-0"										
L-8			40'		12'		35'	15'	80'	53'					25'-4"										
L-9	18'		157'	7'											65'-0"										
L-10	1'-0"		226	134'		10'		80'							165'-0"										
L-11		3'	3'	10'											20'-0"										
L-12			25'	20'											140'-0"										
L-13	10'		12'	23'											40'-0"										
L-14	3'		3'	5'											100										
L-15				5'																					
L-16															3'-0"										
L-17																									
L-18			4'																						
L-19															6'-0"										
L-20																									
L-21																									
L-22																									
L-23				4'																					

LIST OF VALVES

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT NO.	VALVE IDENT.	AMT. REQ'D	SIZE	DESIGN CRITERIA P.S.I.	°F	PRESS. STD	ANSI DIM. STD	BODY MATERIAL	ASTM SPEC.	TRIM SEAT	DISC	STEM	PIN WHERE REQ'D.	END TYPE	ANSI DIM. STD.	
500016-A				5	L-100	1	4"	75	120									FLGD., F.&D.		3-WAY
507500					L-101	6	2½"			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRONZE	BRONZE	—	FLGD., F.&D.	B16.5	GLOB
	507500-K			5	L-102	10	2"			600#	—	FORGED STL.	A-105 GR.II	STAIN.STL	STAIN.STL	STAIN.STL	—	SCREWED	B2.1	GLO
					L-103	1	2"			600#	—	FORGED STL.	A-105 GR.II	STAIN.STL	STAIN.STL	—	—	SCREWED		HORI
					L-104	5	2"			125#	—	BRONZE	B-62	BRONZE	BRONZE	BRONZE	—	SCREWED		QUIC
	507500-D	507500-K		1,5	L-105	8	1½"			600#	—	FORGED STL.	A-105 GR.II	STAIN.STL	STAIN.STL	STAIN.STL	—	SCREWED		GLOB
					L-106	5	1¼"				—						—			GLOB
					L-107	1	1¼"				—						—			ANGL
					L-108	5	1"				—						—			GLOB
					L-109	6	¾"				—						—			GLOB
	507500-T			7	L-110	3	1½"				—					—	—			HORI
					L-111	3	¾"				—					STAIN.STL	—			GLOB
					L-112	15	½"				—						—			GLO
					L-113	1	1¼"				—						—	FLGD., F.&D.	B16.5	ANGL
					L-114	7	¼"				—						—	SCREWED	B2.1	GLOB
				6	~~L-115~~	~~2~~	~~1"~~			200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCRD. & HOSE END	B2.1/B2.4	HOSE
					L-116	1	½"			600#	—	FORGED STL.	A-105 GR.II	STAIN.STL	STAIN.STL	STAIN.STL	—	SCREWED	B2.1	GLOB
				7	~~L-117~~	~~2~~	~~3"~~			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRONZE	BRONZE	—	FLGD., F.&D.	B16.5	GATE
					L-118	1	1"			600#	—	FORGED STL.	A-105 GR.II	STAIN.STL	STAIN.STL	STAIN.STL	—	SCREWED	B2.1	GATE
					L-119	2	¾"				—						—			GLOB
					L-120	1	1"				—					—	—			HORIZ
					L-121	3	1½"				—					STAIN.STL	—			GATE
					L-122	1	½"			200#	—	BRONZE	B-61	BRONZE	BRONZE	BRONZE	—	SCREWED		GLOB
				7	~~L-123~~	~~1~~	~~4"~~			150#	B16.10	CAST STEEL	A-216 GR.WCB	BRONZE	BRONZE	BRONZE	—	FLGD., F.&D.	B16.5	GATE
507500-B				1,3	L-124	2	5"			150*										ANGLE
				1	L-125	1	4"													
				1	L-126	3	½"			600*	—	FORGED STEEL	A-105	STAIN.STL	STAIN. STL	STAIN. STL	—	SCREWED	B2.1	GLOBE
500018				1,3	L-127	1	2½"			150*	B16.10	CAST STEEL	A 216 GR WCB				—	FLGD. F.&D.	B16.5	CONTRO
507500-B				1	L-128	2	1"			600*	—	FORGED STEEL	A 105				—	SCREWED	B2.1	PISTON
507500-C				2	L-129	2	1½"			600#	—		A-105 GR.II				—			GLOBE
				2,7	~~L-130~~	~~6~~	~~1"~~			600#	—						—			GLOBE
				2,7	~~L-131~~	~~5~~	~~¾"~~			600#	—						—			GATE
				2,7	~~L-132~~	~~2~~	~~1½"~~			600#	—						—			GATE
				2,7	~~L-133~~	~~1~~	~~2"~~			600#	—						—			GATE
507500-E				1 4	L-134	1	1"													SOLENOI
				1 4	L-135	1	½"													3-WAY
507500-F				1,4	L-136	1	4"			150*	B16.10	CAST STEEL	A-216, GR.WCB	BRONZE	BRONZE	—	BRONZE	FLANGED, F.&D.	B16.5	SWING
D				1	L-137	1	1½"			600*	—	FORGED STL	A105	STAIN.STL	STAIN. STL	STAIN. STL	—	SCREWED	B2.1	GLOBE
				1	L-138	1	1½"				—						—			GATE
				1	L-139	1	1¼"				—		A105				—			GLOBE
				1	L-140	1	1½"				—									SWING
				1	L-141	1	1½			300*	—	CAST STEEL	A-216 GR.WCB							3-WAY
				5	L-142	3	½"			400*	—			TEFLON						BALL
507500-J				6	L-143	2	1½"			150*	—	FGD ST'L	A-105	STN.STL			—	FLGD. F.&D.	B16.5	GLOB

PIPING PACKAGE UNIT APPLICATION

VALVE IDENT.	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #11	UNIT #12	UNIT #13	UNIT #14	UNIT #15	UNIT #16	UNIT #17	UNIT #18	UNIT #19	UNIT #20
L-100																				
L-101																				
L-102																				
L-103																				
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L-143																				

STRUCTURAL MODULAR UNIT APPLICATION

VALVE IDENT.	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5	UNIT #6	UNIT #7	UNIT #8	UNIT #9	UNIT #10	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #15	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #	UNIT #
L-100	1																								
L-101			2		1		1	1	1																
L-102			8	1	1																				
L-103			1																						
L-104			3						1						1										
L-105			1	2		2	1	1							1										
L-106			4																						
L-107																									
L-108																									
L-109	3		3																						
L-110			3																						
L-111				1																					
L-112	1		2	2																					
L-113															1										
L-114																									
L-115																									
L-116																									
L-117																									
L-118																									
L-119				1																					
L-120			1																						
L-121								1																	
L-122																									
L-123																									
L-124															2										
L-125															1										
L-126															3										
L-127															1										
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L-135															1										
L-136				1																					
L-137				1																					
L-138				1																					
L-139				1																					
L-140				1																					
L-141				1																					
L-142				3																					
L-143	2																								

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-2

FRAME 1 OF 4

LIST OF FLANGES

REQUISITION NO.			ALT NO	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	°F	INSTALL HYDRO TEST	PRESS STD	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
				L-200	3	12"				150#	16.5	FORGED STL	A105	SLIP-ON RAISED FACE FFD			NOTES 90-93	TUBE TURN PT NO 50
			2	L-201	7	6"												
	507501-A			L-202	23	5"												
		507506-DA	3,4	L-203	19	4"												
		507501-DA	3,6	L-204	54	3"												
		507501-M		L-205	56	2½"								SOCK WELD BORE FOR SCH 40				150
				L-206	3	4"								SLIP-ON FLAT FACE				50
	507501-A	507501-2D	2,4	L-207	32	2"								SOCKET WELD RAISED FACE (BORE FOR SCH 40)				150
		507501-D		L-208	36	1½"												
				L-209	27	1"												
				L-210	2	1½"				600#								152
				L-211	2	2"				150#				FLAT FACE				160
				L-212	2	1"												150
				L-213	2	¾"												150
				L-214	2	6"								SLIP-ON				50
				L-215	3	3"												50
				L-216	2	2½"								SOCK. WELD BORE FOR SCH 40				150
				L-217	2	6"								BLIND RAISED FACE				70
				L-218	1	3½"												70
				L-219	9	½"								SOCKET WELD BORE FOR SCH 40				150
				L-220	6	¾"												160
	507501-B			L-221	11	1¼"												150
				L-222	10	3½"								SLIP-ON				50
				L-223	4	8"												50
				L-224		5"								WELD NECK FLG BORE FOR SCH 40				30
				L-225	1	4"												30
				L-226		3"				300#				SLIP-ON FLG				51
				L-227	1	2"								SOCK. WELD BORE FOR SCH 40				151
				L-228	3	3"				150#				WELD NECK FLG				30
				L-229	1	4"								BLIND				70
				L-230	3	3"												70
				L-231	1													70
	507501-M			L-232	4													70
				L-233	4													70
				L-234														70
				L-235	1	1½"				300#				SOCK. WELD FLG. BORE FOR SCH 40				151
		507501-D		L-236	2	1½"												151
				L-237	2	1"												151
				L-238	1					150#				SOCK. WELD REDUCING FLG.				150 MU
				L-239	3	1¼"				150#				SOCKET WELD - FLAT FACE				150

LIST OF GASKETS

REQUISITION NO.			ALT. NO.	GASKET IDENT. NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	°F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
				L-300	2	4"				150#	16.21	HYDROIL	MIL-P-20085	FULL FACE - ⅛" THICK				ANCHOR PACKING STYLE 512
				L-301	3	12"								RING TYPE - ⅛" THICK				
				L-302	9	6"												
				L-303	17	5"												
	507524-C		1,3,4	L-304	17	4"												
			1,3,6	L-305	36	3"												
		507524-F	1,5	L-306	37	2½"												
				L-307	22	2"												
	507524-C		1,3,5	L-308	23	1½"												
				L-309	21	1"												
				L-310	2	1½"				600#								
				L-311	11	3"				150#				FULL FACE				
				L-312	4	2½"												
				L-313	4	2"												
				L-314	4	1"												
				L-315	4	¾"												
				L-316	234 FT	—				—	—			— —				
				L-317	2	6"				150#	16.21			FULL FACE				
				L-318	12	½"				150#				RING TYPE				
				L-319	6	3½"												
				L-320	4	8"												
				L-321	4	¾"												
				L-322	8	1¼"												
			1,3	L-323	2	3"				300#	—							
			1,3	L-324	1	2"					—							
			1,3	L-325	1	1½"												
			1,3	L-326	2	1½"												
			1,3	L-327	2	1"												
				L-328	3	1¼"				150#	16.21	HYDROIL	MIL-P-20085	FULL FACE - ⅛" THICK				ANCHOR PACKING STYLE 502

LIST OF STUDS, BOLTS & NUTS

REQUISITION NO.			ALT NO	BOLTING IDENT. NO.	AMT REQ'D	STUDS MATERIAL ASTM	STUDS DIA	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS (SEMI-FINISHED, 2) HEAVY HEX. HD NUTS EACH) MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	°F	HEAVY HEX HEAD BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	HEAVY HEX. HEAD NUTS (SEMI-FINISHED) MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	SERVICE	CODE NO.	REMARKS
SUPPLY	SUPPLY			L-400	36										A307 GR B	⅞"	4"	B18.2.1 B1.1 UNC-2A	A307-GR B	⅞"	B18.2.2 B1.1 UNC-2B	L-200		
				L-401	216											¾"	3¼"			¾"		L-201, L-202, L-214, L-217, L-224		
				L-402	424											⅝"	3"			⅝"		L-203 THRU 206, L-215, L-216, L-218, L-222, L-2		
				L-403	104											⅝	2¾			⅝"		L-207, L-211		
			2,3,5	L-404	132											½"	2¼"			½"		L-208, L-221		
				L-405	132											½"	2"			½"		L-209, L-212, L-213, L-220		
				L-406	48											½"	1¾"			½"		L-219		
				L-407	32											¾"	3½"			¾"		L-223		
				L-408	12	A-193 GR B7	⅝	3"	B18.2.1 B1.1 UNC-2A	A-194 GR 2H	⅝"	B18.2.2 B1.1 UNC-2B										L-236, L-237		
				L-409	14		¾"	3½"			¾"											L-235		
				L-422	12		½"	2¼"			½"											L-249		
				L-411	24	A-193 GR B7	¾"	4"	B18.2.1 B1.1 UNC-2A	A-194 GR 2H	¾"	B18.2.2 B1.1 UNC-2B										L-210, L-226		
				L-412	16		⅝"	3¼"			⅝											L-227		
				L-413	12										A307 GR B	½"	1¼"	B18.2.1 B1.1 UNC-2A				L-239		
			3	L-414	8	A-193 GR B7	⅞"	5¼"	B18.2.1 B1.1 UNC-2A	A-194 GR 2H	⅞"	B18.2.2 B1.1 UNC-2B										L-240		
			3	L-415	16		¾"	4½"			¾"											L-241, L-242		
			3	L-416	16		¾"	4¼"			¾"											L-243		
			3	L-417	8		⅝"	3¾"			⅝"											L-244		
			3	L-418	4		¾"	3¾"			¾"											L-245		
			3	L-419	8		⅝"	3½"			⅝"											L-246		
			3	L-420	16		⅝"	3¼"			⅝"											L-247		
			3	L-421	8		⅝"	3"			⅝"											L-248		

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	1-12-77		1. ADDED L-224, L-225, L-226, L-227, L-323, L-324, L-412, L-228 2. INC. THE QUANTITY OF THE FOLLOWING: L-202 (16-23), L-203 (5-7), L-204 (43-48), L-205 (51-56), L-207 (28-29), L-208 (32-36), L-303 (9-17), L-304 (6-17), L-305 (19-24), L-306 (32-36), L-307 (21-22), L-308 (16-17), L-401 (160-216), L-402 (376-424), L-403 (100-104), L-404 (72-86), L-411 (8-24)	G.L.W.	G.G. SHARP LTR DATED 5-19-77
2	4-14-77		1. ADDED L-229 THRU L-238, L-325, L-326, L-327, L-408 & L-409. 2. INCR. L-221 (3-11) & L-322 (2-8)	G.L.W.	G.G. SHARP LTR. DATED 8-11-77
	4-27-77		3. ADDED PC's L-239 - L-328 + L-413 4. INCR. QTY L-404 (86-100)	R.L.	
	4/12/77		5. REVISED QTY OF L-201 (WAS 6)	Secc	
3	9-30-77		1- ADDED L-240 TO L-251, L-329 TO L-338 & L-414 TO L-423 2- FOR ITEMS L-323 TO L-327 CHANGED THE GASKETS TO RING TYPE & THE MAT'L SPEC & CAT. NO TO SUIT. 3- INCR. THE QTY OF: L-200 (2-3), L-203 (7-10), L-204 (48-52), L-207 (29-31), L-236 (1-2), L-304 (9-13), L-305 (24-34), L-308 (17-21), L-326 (1-2), L-404 (100-116).	PCG	
4	5/8/78	—	1- INCR THE QTY OF L-203 (10-19) & L-304 (15-17) PER YIS NO. 4650-22-82 & INCR THE QTY OF L-207 (31-32)	PCG	78
5	6/30/78		1- INCR. THE QTY OF: L-205 (54-56) & L-306 (36-37) PER YIS NO. 4650-22-197 & L-232 (2-4) L-308 (21-23) & L-404 (116-132) PER YIS. NO. 4650-22-155	PCG	78
6	10-4-78		1. REVISE QTY. OF ITEMS: L-305 FROM 34 TO 35 AS PER YIS 4650-22-166 L-305 FROM 35 TO 36 L-204 FROM 52 TO 54 AS PER Y.I.S 4650-22-166	LPK	4/17/79
	4/4/79		2) ADDED L-252 PER YIS 4650-22-402.	J.H.	

4651		
4650	27,340 DWT CONTAINERSHIP	8450
HULL	DESIGN	CHARGE

JOB NO. 373

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ~ DATE 11/10/76
DRAWN W APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. M4650-373-06-2 ALT. NO. 6

FLANGE, GASKET, STUD, BOLT & NUT LIST FOR LUBRICATING OIL PIPING

HULL	APPROVAL LETTERS 4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

M-731

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-2

FRAME 2 OF 4

LIST O

SERVICE	CODE NO.	SPECIAL NOTES FROM REF.#1	CAT. OR DRWG. NO.
		NOTES 90-128	TUBE TURN
			PT #120
			TUBE TURN PT #120

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

FLANGE IDENT. NO.	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 8	UNIT 9	UNIT 10	UNIT 15	REQUISITION NO.			ALT NO.	AMT. REQ'D.	SIZE	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	
L-200										3	507501		507501-D	3	3	12"	150#	16.5	FORGED STL	A105	SLIP-O
L-201	6									1	507501	507501-B		2	7	6"					
L-202	4									18		507501-A		1	23	5"					
L-203				16						3			(1) 507501-D/K	1,3,4	19	4"					
L-204	4		12	3	5			2	2	26			507501-D/K	1,3,6	54	3"					
L-205			10		3		6	10	6	12			507501-M	1,5	56	2½"					SOCK. WE
L-206	3														3	4"					SLIP-ON
L-207	2		8		4					18		507501-A	507501-D/K	1,3,4	32	2"					SOCKET
L-208	2		4			2				18			507501-D	1	36	1½"					
L-209			3							16					27	1"					
L-210															2	1½"	600#				
L-211															2	2"	150#				
L-212															8	1"					
L-213															2	¾"					
L-214	2														2	6"					SLIP-O
L-215															3	3"					
L-216															2	2½"					SOCK. W
L-217															2	6"					BLIN
L-218															1	3½"					
L-219										4					9	½"					SOCKET
L-220										4					6	¾"					
L-221										11		507501-B		2	11	1¼"					
L-222				2						1					10	3½"					SLIP-O
L-223															4	8"					
L-224											507501-A			1	2	5"					WELD NECK
L-225														1	2	4"					
L-226										2				1	2	3"	300#				SLIP-ON FL
L-227														1	1	2"					SOCK. WELD
L-228										3				1	3	3"	150#				WELD NECK
L-229										1	507501-B			2	1	4"					BLIND
L-230										2				2	3	3"					
L-231										1				2	1	2"					
L-232	2									2		507501-H		2,5	4	1½"					
L-233										4				2	4	1½"					
L-234										2				2	2	1"					
L-235										1				2	1	1½"	300#				SOCK. WELD
L-236										2			507501-D	2,3	2	1½"					
L-237										2				2	2	1"					
L-238										1				2	1	500x1"	150#				SOCK. WELD
L-239		1				2								2	3	1¼"	150#				SOCKET W

LIST O

SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
		SEE TABLE 2 OF ANSI B16.21	

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

GASKET IDENT NO.	UNIT 1	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 8	UNIT 9	UNIT 10	UNIT 15	REQUISITION NO.			ALT. NO.	AMT REQ'D.	SIZE	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	
L-300										507524				2	4"	150#	16.21	HYDROIL	MIL-P-20085	FULL FA
L-301									3					3	12"					RING TY
L-302	4								1					9	6"					
L-303	3								11				1	17	5"					
L-304	3		10						4		507524-C	507524-D	1,3,4	17	4"					
L-305	1	8	1	2			2	1	21			507524-H/M	1,3,6	36	3"					
L-306		7		3		4	7	3	8		507524-G	507524-F	1,5	37	2½"					
L-307		5		2					13				1	22	2"					
L-308	4	4			2				13		507524-C	507524-E	1,3,5	23	1½"					
L-309		3							11					21	1"					
L-310														2	1½"	600#				
L-311														11	3"	150#				FULL FA
L-312														4	2½"					
L-313														4	2"					
L-314														4	1"					
L-315														4	¾"					
L-316										RES.				250 FT	—	—	—			—
L-317	2									507524				2	6"	150#	16.21			FULL F
L-318									2					12	½"	150#				RING TY
L-319			2						1					6	3½"					
L-320														4	8"					
L-321									2					4	¾"					
L-322									8		507524-B		2	8	1¼"					
L-323									2	507524-C			1,3	2	3"	300#	—			
L-324									1				1,3	1	2"		—			
L-325									1				1,3	1	1½"					
L-326									2				1,3	2	1½"					
L-327									2				1,3	2	1"					
L-328					2					507524-B			2	3	1¼"	150#	16.21	HYDROIL	MIL-P-20085	FULL

LIST OF STUD

SERVICE	CODE NO.	REMARKS
CAP SCREW L-250 & L-251		

PIPING PACKAGE UNIT APPLICATION

STRUCTURAL MODULAR UNIT APPLICATION

NUTS SEMI-FINISHED (2) HEAVY HEX. HD NUTS EACH

BOLTING IDENT NO.	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 8	UNIT 9	UNIT 10	UNIT 15	REQUISITION NO. BOLTS	REQUISITION NO. NUTS	ALT NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.
L-400										24	SUPPLY	SUPPLY		36							
L-401	72									88			1	216							
L-402	28		60	92	8		16	36	12	136	SUPPLY		1	424							
L-403			20		8					48	507530		1	104							
L-404	16		28			4				84	507530 507530-A		1,2,3,5	132							
L-405			12							52	SUPPLY			132							
L-406										8	507530			48							
L-407											SUPPLY			38							
L-408										8	507529-A		1	12	A-193 GR B7	⅝	3"	[illegible]	A-194 GR 2H	⅝"	[illegible]
L-409										4	507529-A		1	4		¾"	3½"			¾"	
L-422										12			3	12		½"	2¾"			½"	
L-411											507529	507529	1	24	A-193 GR B7	¾"	4"	B18.2.1 B1.1 UNC-2A	A-194 GR 2H	¾"	B18.2.2 B1.1 UNC-2B
L-412											507529	507529	1	16		⅝	3¼"			⅝	
L-413		4				8					SUPPLY		2	12							
L-414										8	507529-B		3	8	A-193 GR B7	⅞"	5¼"	B18.2.1 B1.1 UNC-2A	A-194 GR 2H	⅞"	B18.2.2 B1.1 UNC-2B
L-415										16			3	16		¾"	4½"			¾"	
L-416										16			3	16		¾"	4¼"			¾"	
L-417										8			3	8		⅝"	3⅝"			⅝"	
L-418										4			3	4		¾"	3¾"			¾"	
L-419										8			3	8		⅝"	3½"			⅝"	
L-420										16			3	16		⅝"	3¼"			⅝"	
L-421										8			3	8		⅝"	3"			⅝"	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-2

FRAME 3 OF 4

LIST OF FLANGES

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 15	REQUISITION NO.	ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	SPECIAL NOTES FROM REF #1	CAT. OR DRWG. NO.
																NOTES 90-93	TUBE TURN
1	507501-D	3	L-240	1	4"				600#	B16.5	FORG. ST'L.	A-105	SLIP-ON LARGE FEMALE FLANGE				
1		3	L-241	1	3"												
1		3	L-242	1	3"								MALE				
2		3	L-243	2	2½"								SOCK. WELD BORE-SCH 40				
1		3	L-244	1	2"												
1		3	L-245	1	1½"												
2		3	L-246	2	1¼"												
4		3	L-247	4	1"												
2		3	L-248	2	¾"												
3		3	L-249	3	½"												
1		3	L-250	1	1⅜OD x 5"				150#				SLIP-ON REDUCING FLANGE FLAT FACED				PT #120
1		3	L-251	1	1⅜OD x 5"				150#								
1	807501-P	6	L-252	1	[illegible] x 4"				150#				SLIP-ON REDUCING FLANGE F.&D.				TUBE TURN PT #120

LIST OF GASKETS

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 15	REQUISITION NO.	ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE	SERVICE	CODE NO.	REMARKS	CAT. OR DRWG. NO.
																SEE TABLE I OF ANSI B16.21	
1	507824-C	3	L-329	1	4"				600#	B16.21	HYDROIL	MIL-P-20085	LARGE MALE				
2		3	L-330	2	3"												
2		3	L-331	2	2½"												
1		3	L-332	1	2"												
1		3	L-333	1	1½"												
2		3	L-334	2	1¼"												
4		3	L-335	4	1"												
2		3	L-336	2	¾"												
3		3	L-337	3	½"												
2		3	L-338	2	8"				150#	B16.21			FULL FACE				

LIST OF STUDS, BOLTS & NUTS

STRUCTURAL MODULAR UNIT APPLICATION

UNIT 15	REQUISITION NO.	ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	SERVICE	CODE NO.	REMARKS
16	SUPPLY	3	L-423	16										A-307 GR. B	5/8-10	2¼"	B18.2.1 UNC-2A				CAP SCREW L-250 & L-251		

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
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NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-2

FRAME 4 OF 4

LIST OF FLANGES

PIPING PACKAGE UNIT APPLICATION: UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION UNIT 15	REQUISITION NO.	ALT NO.	FLANGE IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE
1	507501D	3	L-240	1	4"				600#	B16.5	FORG. ST'L.	A-105	SLIP-ON LARGE FEMALE FLANGE
1		3	L-241	1	3"								
1		3	L-242	1	3"								MALE
2		3	L-243	2	2½"								
1		3	L-244	1	2"								SOCK. WELD BORE SCH 40
1		3	L-245	1	1½"								
2		3	L-246	2	1¼"								
4		3	L-247	4	1"								
2		3	L-248	2	¾"								
3		3	L-249	3	½"								
1		3	L-250	1	1⅜ OD×5"				150#				SLIP-ON REDUCING FLANGE FLAT FACED
1		3	L-251	1	1⅜ OD×5"				150#				
1	507501-P	6	L-252	1	[illegible]×4"				150#				SLIP-ON REDUCING FLANGE F.F.D.

LIST OF GASKETS

PIPING PACKAGE UNIT APPLICATION: UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION UNIT 15	REQUISITION NO.	ALT. NO.	GASKET IDENT NO.	AMT REQ'D.	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	INSTALL HYDRO TEST	PRESS STD.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	TYPE
1	507524-C	3	L-329	1	4"				600#	B16.21	HYDROIL	MIL-P-20088	LARGE MALE
2		3	L-330	2	3"								
2		3	L-331	2	2½"								
1		3	L-332	1	2"								
1		3	L-333	1	1½"								
2		3	L-334	2	1¼"								
4		3	L-335	4	1"								
2		3	L-336	2	¾"								
3		3	L-337	3	½"								
2		3	L-338	2	8"				150#	B16.21			FULL FACE

LIST OF STUDS, BOLTS & NUTS

PIPING PACKAGE UNIT APPLICATION: UNIT #1 UNIT #2 UNIT #3 UNIT #4 UNIT #5 UNIT #6 UNIT #7 UNIT #8 UNIT #9 UNIT #10 UNIT #11 UNIT #12 UNIT #13 UNIT #14 UNIT #15 UNIT #16 UNIT #17 UNIT #18 UNIT #19 UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION	REQUISITION NO.	ALT NO.	BOLTING IDENT. NO.	AMT. REQ'D.	STUDS MATERIAL ASTM	STUDS DIA.	STUDS LGTH.	STUDS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA.	NUTS ANSI DIM. STD.	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	BOLTS MATERIAL ASTM	BOLTS DIA.	BOLTS LGTH.	BOLTS ANSI DIM. STD.	NUTS MATERIAL ASTM	NUTS DIA
UNIT 15																			
16	SUPPLY	3	L-423	16										A-307 GR. B	⅝"-10	2½"	B18.2.1 UNC-2A		

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-3

FRAME 1 OF 5

LIST OF FITTINGS

ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF. #1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
	L-500	1	6"	40	.280	B16.9	SMLS STEEL	A234 GR WPB	90° ELL L.R. B.W.		NOTES 90-93	TUBE TURN PT NO 1
	L-501	18	5"		.258							
	L-502	10	4"		.237							
	L-503	33	3"		.216							
	L-504	20	2½"		.203							
	L-505	4	6"x5"		.280 .258				90° RED ELL L.R. B.W.			1-R
	L-506	5	4"		.237				45° ELL L.R. B.W.			5
1,7	L-507	10	3"		.216							
5,7	L-508	6	2½"		.203							
	L-509	1	4"		.237				180° RETURN BEND L.R. B.W.			7
	L-510	4	3"		.216							
	L-511	1	2½"		.203							
	L-512	1	1½"		.145							
	L-513	2	6"x5"		.280 .258				CONCENTRIC REDUCER B.W.			90
	L-514	3	5"x4"		.258 .237							
	L-515	3	4"x3"		.237 .216							
	L-516	1	4"x2"		.237 .154							
	L-517	2	3"x2"		.216 .154							
	L-518	1	2½"x1½"		.203 .145							
	L-519	3	3"x2½"		.216 .203							
	L-520	1	4"		.237				TEE B.W.			20
	L-521	7	3"		.216							
	L-522	3	2½"		.203							
	L-523	1	4x4x3		.237 .216				REDUCING B.W.			22
	L-524	1	3x3x2½		.216 .203							
	L-525	1	4"		.237		CAST STEEL	A216 GR WCB	VENT TERMINAL B.W. WITH SCREEN BOLTED COVER			TATE FIG. 52-40V
	L-526	4	3"		.226							
	L-527	1	2½"		.203							
1,4,7	L-528	27	2"	3000#		B16.11	FORGED STEEL	A234	90° ELL S.W.		NOTES 90-93	BONNEY FORGE
	L-529	53	1½"									
	L-530	22	1"									
	L-531	25	¾"									
	L-532	11	½"									
	L-533	7	⅜"									
	L-534	1	¼"									
	L-535	1	2"						45°			
	L-536	9	1½"									
2	L-537	1	3"x2"	40	.216x.154	B16.9	SMLS. STEEL	A234 GR WPB	90° REDUCING ELL - B.W.			TUBE TURN #1-R
	L-538	1	2"x1½"	3000#		B16.11	FORGED STEEL	A234	- S.W.			BONNEY FORGE
	L-539	1	2"x1"									
	L-540	2	1½"x1"									
3,7	L-541	10	2"						TEE S.W.			
	L-542	14	1½"									
	L-543	6	1"									
	L-544	7	¾"									
	L-545	5	½"									
	L-546	1	⅜"									
	L-547	8	¼"									
	L-548	1	2x1½x2						REDUCING S.W.			
	L-549	1	2x2x1									
	L-550	2	[illegible]									
	L-551	4	1½x1x1½									
	L-552	2	2x¾x2									
	L-553	1	1½x1½x1									
	L-554	1	[illegible]									
	L-555	3	1x1x¾									
	L-556	1	1x½x1									
	L-557	1	[illegible]									
	L-558	1	1¼x1x1									
7	L-559	2	[illegible]									
	L-560	2	[illegible]									
	L-561	1	2½"						UNION S.W.			
	L-562	11	2"			B16.11						
	L-563	31	1½"									
	L-564	16	1"									
	L-565	13	¾"									
	L-566	18	½"									
	L-567	2	¼"									
	L-568	1	1½"						COUPLING S.W.			
	L-569	1	2"x1¼						REDUCING S.W.			
	L-570	1	2½x2									
	L-571	1	[illegible]						REDUCING INSERT S.W.			
	L-572	1	1½x1									
	L-573	1	[illegible]									
	L-574	1	½x⅜									
	L-575	6	¾x½	6000#								
	L-576	1	½x⅜	6000#								
	L-577	5	[illegible]	3000#				A105	ELBOWLET S.W. - FOR L.R. ELBW		NOTES 173, 90-93	
	L-578	1	[illegible]									
	L-579	1	[illegible]						THD (½" F.P.T.)			
	L-580	2	[illegible]						SOCKOLET RUN & OUTLET, I.P.S.		171, 90-93	
	L-581	2	[illegible]									
	L-582	3	2½x1½									
	L-583	3	[illegible]									
	L-584	6	[illegible]									
7	L-585	3	[illegible]									
	L-586	4	[illegible]									
3,4,5	L-587	17	[illegible]						THREADOLET		170, 90-93	
	L-588	6	[illegible]									
	L-589	1	½"			B16.11		A234	HALF COUPLING S.W.		90-93	
	L-590	2	1½x1"						REDUCING INSERT S.W.			
	L-591	1	¼"	200#			BRONZE	B-62	90° ELBOW SIL BRAZE		181, 90-93	FLAGG FLOW FIG. 5001
	L-592	2	2"	3000#		B16.11	FORGED STEEL	A-234	90° ELBOW SCRD		175, 90-93	BONNEY FORGE
	L-593	2	1"									
	L-594	1	¾"									
	L-595	1	½x⅜						90° ELBOW REDUCING SCRD			
	L-596	1	1½"	2000#				A105	90° UNION STREET ELBOW SCRD			VOGT FIG. 5061
4	L-597	1	1¼"	300#			BRONZE	B-62	90° SWING JOINT SCRD	BALL BEARING - 3 PLANE TYPE		OPW-FIG#3-3-10-12
	L-598	2	½"	3000#		B16.11	FORGED STEEL	A-234	TEE SCRD			BONNEY FORGE
	L-599	3	¼"									
	L-600	1	2x2x1						REDUCING SCRD			
	L-601	1	[illegible]						SCRD			
	L-602	1	1½"						CROSS			
	L-603	3	¾"					A105	UNION SCRD			
	L-604	8	½"									
	L-605	4	⅜"									
	L-606	2	1¼"						STREET UNION SCRD			CRANE FIG. NO. 254-H
	L-607	1	2x1¼			B16.14			REDUCER BUSHING SCRD			BONNEY FORGE
	L-608	1	1½x1"									
	L-609	5	½x¼									

UAO-50138

NO.	PLAN NO.	TITLE
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURNISHED MAT'L

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
6	6/30/78		1- INCR. QTY OF L-521 (6-7), L727 (35-65) & L730 (13-35) 2- REMOVED RES. ON L-621 3- DELETED L-618, L-630, L-633, L-634, L-639 & L-645 THRU L-650 (ALL WERE RES'D)	PCG	7/6/78
7	10-4-78		1-DIA. OF ORIFICE IN ORIFICE PLATE (ITEM L-710) CHANGED FROM 2" TO 1.62", IN ACCORD WITH ALT. #2 OF 4650-111-20-69 2-LENGTH OF GAUGE GLASS (ITEM L-728) CHANGED FROM 28" TO 2'-8" PER Y.I.S. M-4650-22-189 3-ITEM L-681 INCR. FROM 1 TO 2, ITEM L-541 INCR. FROM 9 TO 10, AND ITEM L-585 INCR. FROM 1 TO 3 (PER Y.I.S. M-4650-22-283) 4. ADDED L-745 FOR DRIP TK OVFLOW 5. L-507 QTY 10 WAS 8; L-508 QTY 6 WAS 2; L-559 QTY 2 WAS 1; ADDED L-746, L-747, L-748, & L-749 PER YIS 4650-22-329 6. L-528 QTY 27 WAS 25 PER YIS 4650-22-316 7. L-682 IN DESCRIP. REM "W/COVER"; IN REMARKS REM "MK#11" PER YIS 4650-22-329	P.G. EJK	4/2/79

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	1-18-77 8-25-77		1. ADDED L-678 & L-679 2. REVISED L-657 THRU L-665 FROM WELDOLET TO SOCKOLET TO AGREE WITH PIPING DIAGRAM 3. INCREASED THE QTY. OF THE FOLLOWING: L-501 (15-18), L-502 (4-5), L-503 (32-33), L-504 (14-18), L-507 (7-8), L-515 (2-3), L-521 (3-4), L-528 (19-20), L-529 (38-40), L-534 (2-3), & L-547 (4-8) 4. REVISED L-601 FROM CROSS TO TEE. 5. REVISED MATERIAL OF L-624 FROM "STEEL" TO "CAST IRON" AND MODEL NO. FROM BLACKMER 828-VA TO BLACKMER PA-828	G.L.W. PCG	G.G. SHARP LTR DATED 5-19-77
2	4-26-77 4-27-77 4-12-77 5-16-77		1. ADDED L-680 THRU L-693 2. REMOVED RESERV. FROM L-619 & L-679 3. INCR. THE FOLLOWING, L-530 (7-8), L-543 (5-6), L-566 (6-18), L-581 (1-2), L-668 (1-2). 4. REVISED L-537 FROM SOCK WELD TO BUTT WELD. / INFO. TO SUIT 5. REVISED SIZE INDENTIFICATION FROM ¾"x⅜" TO ⅜"x⅜" AND REMOVED RESERV. FOR L-573. 6. ADDED PC# L-694 & L-695 7. REMOVED RESERV. ON PC# L-631 8. ADDED PC# L-696. 9. REVISED QTY OF L-505 (WAS 3), L-514 (WAS 2) 10. ADDED L-697 THRU L-708 11. REVISED QTY L-536 (2 TO 9), L-542 (7 TO 9), L-550 (1 TO 2), L-560 (1 TO 2), L-566 (16 TO 18), L-575 (1 TO 6) AND L-675 (1 TO 2)	G.L.W. K.L. Jeoc D.L.B.	G.G. SHARP LTR DATED 8-1-77
3	10-3-77		1- INCR THE QTY OF: L-502 (5-10), L-510 (3-4), L-519 (2-3), L-521 (4-6), L-522 (1-3), L-526 (3-4), L-529 (40-51), L-530 (8-20), L-541 (7-9), L-542 (9-14), L-587 (4-16), L-681 (4-6), L-697 (2-4) 2- REMOVED THE RES. FROM: L-620, L-622 & L-632. 3- DELETED L-704. 4- REVISED THE FOLLOWING: L-697 CH'G'D SIZE (4"x3" TO 4"x3½"); L-698 & L-699 - CH'G'D DESCR. TO RED. INSERT; L-700 - CH'G'D SIZE (1½"x⅜") TO 1½"x½") 5- ADDED ITEM NOS. L-709 TO L-724	PCG	10/5/77
4	1-31-78		1. INCREASED THE QTY. FOR: L-528 (20-26), L-529 (51-53), L-617 (3-5), L-635 (2-3), L-711 (3-6). (DCR DATED [illegible]) 2. ADDED L-725 THRU L-735. 3. REVISED THE SIZE FOR: L-587 (36-⅜"x¼" TO 2½-2"x¼"); L-597 (¾" TO 1¼"). REVISED THE MANUFACTURERS DWG. FOR L-597 (CRANE FIG. NO. 300 TO OPW FIG. #3 3-10-12) 4. REMOVED RESERVATIONS ON: L-627, L-628 & L-629	RAM RAM	2-2-78
5	5/4/78		1 INCR QTY OF L-504 (18-20), L-508 (1-2), L-587 (16-17), L-713 (10-15) & L-727 (20-35), L-582 (2-3), L-530 (20-22) 2- REVISED SIZE & DESCRIP. OF L-628 (WAS 2½"x2"x¾", SOCKOLET). 3- REVISED DESCRIP. OF L-712 THRU L-716 (ALL WERE UNION SCR'D) 4- ADDED A LENGTH TO DK. SUVG FTG NOS. L-635, L-636, L-680 & L-684. 5- ADDED SIZE OF SUCT & DISCH FOR FTG NO. L-624 6- ADDED FTG. NOS. L736 TO L744	PCG	5/11/78

HULL	DESIGN	CHARGE
4651	↑	↑
4650	27,240 DWT CONTAINERSHIP	8450

JOB NO. 373

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ~ DATE 11/12/76
DRAWN W.E. APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. M4650-373-06-3 ALT. NO. 7

FITTING LIST FOR LUBRICATING OIL PIPING

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-19-77				
A.B.S.	9-16-77				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

M-732

ALTERATION	DATE OF ISSUE
ENGINEERING DISTRIBUTION	
OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R	
OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
HULL DRAFT-31	
MACH. DRAFT	
ELEC. DRAFT	
OUTFIT DRAFT	
ESTIMATING	
PRODUCTION	
ORDER DEPT.	
JOINER CONT.	
TOTAL ENG'R. DIST.	
YARD DISTRIBUTION	
UAO	
SHIP SUPT.	
PIECE RATE	
TEST DEPART.	
GROUND ASSEMBLY	
H. LEVY	
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL	
WET DOCK	
PIPE SHOP	
OUTFIT #1 PIER	
PIPE DRAFT	
BOILER SHOP	
OUTSIDE MACH.	
C-MAT'L	
ELECTRIC SHOP	
SHEET MET. SHOP	
COPPER SHOP	
PAINT SHOP	
WELDING	
MOLD LOFT - 41	
BRACKET SHOP	
TOTAL YARD DIST.	

SQ. FT.

M4650-373-06-3

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-3

FRAME 2 OF 5

REMARKS	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
	NOTES 171, 90-93	BONNEY FORGE
	90-93	
	NOTES 90-93	BONNEY FORGE
		BETH STD EF-390
S#3 & DET 6C		BETH STD EF 390
S#3 & DET 6C		
	NOTES 90-93	ANACONDA ITEM 77
	SEE NOTE #96	TATE DWG NO 1-035-3
	NOTES 171, 90-93	BLACKMER PA-828
	90-93	TATE 5240V
		TATE 5240R
	SEE DET. "1-E" ON III-17	
	SEE DET. "9-D" ON III-18	
	VENDOR FURNISHED	
		BETH STD 85 ZUF
		BETH STD EF-355
		BETH STD EF 355
		BETH STD EF-410 FIG. 2
	NOTES 171, 90-93	BONNEY FORGE
	FURN W/DIESEL GEN.	
	NOTES 90, 92, 93	ERNST FIG. TF-G8
	90-93	SWAGELOK
	172, 90-93	
	173, 90-93	
		HEWITT ROBBINS
	NOTES 90-93	TUBE TURN PT NO 1-T
		1
		20
		20
		90
		90
		90
	171 90-93	BONNEY FORGE
	173, 90-93	
	174, 90-93	
		TUBE TURN PT. 10
	63, 90-93	
	NOTES 171, 90-93	BONNEY FORGE
	90-93	
	NOTES 90-93	TUBE TURN PT. NO. 7
		BONNEY FORGE
		TUBE TURN PT NO 7
		BONNEY FORGE
		TUBE TURN PT. NO. 1-R
		90
	NOTES 90-93	BONNEY FORGE
THRU		DRESSER STYLE 38
THRU		
		BONNEY FORGE
	NOTES 90-93	
		85 ZUF
	NOTES 173, 90-93	BONNEY FORGE
	NOTES 174, 90-93	

LIST OF

STRUCTURAL MODULAR UNIT APPLICATION: UNIT 1	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT #15	REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	°F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	AST SPE
										SUPPLY					L-500	1	6"			40	.280	B16.9	SMLS STEEL	A234
3									12					1	L-501	18	5"				.258			
		9							1					1,2	L-502	10	4"				.237			
	13	1	1				1		17						L-503	33	3"				.216			
	5					3	3	1	7					1,5	L-504	20	2½"				.203			
6										507502	507502-B			2	L-505	4	6"x5"				.280 .258			
															L-506	5	4"				.237			
	4	3					1		1		507502-A	507502-G		1,7	L-507	10	3"				.216			
	4								1		507502-E	507502-G		5,7	L-508	6	2½"				.203			
															L-509	1	4"				.237			
	2	1					1				507502-C			3	L-510	4	3"				.216			
															L-511	1	2½"				.203			
															L-512	1	1½"				.145			
															L-513	2	6"x5				.280 .258			
2									1		507502-B			2	L-514	3	5"x4"				.258 .237			
											507502-A			1	L-515	3	4"x3"				.237 .216			
															L-516	1	4"x2"				.237 .154			
															L-517	2	3"x2"				.216 .154			
															L-518	1	2½"x1½"				.203 .145			
	2								1		507502-C			3	L-519	8	3"x2½"				.216 .203			
															L-520	1	4"				.237			
	4						1		2		507502-A	507502-C	507502-F (3)	1,3,6	L-521	7	3"				.216			
	1						2				507502-C			3	L-522	3	2½"				.203			
															L-523	1	4"x4"x3"				.237 .216			
	1														L-524	1	3"x3"x2½"				.216 .203			
										507500-A					L-525	1	4"				.237	—	CAST STEEL	A216
	2	1					1				507500-G			3	L-526	4	3"				.226	—		
															L-527	1	2½"				.203	—		
	15	5	1						6	SUPPLY				1,4,7	L-528	27	2"			3000#	—	B16.11	FORGED STEEL	A234
	6	19		4	2		8		12					1,8,4	L-529	53	1½"							
2	6	2							10					2,5,5	L-530	22	1"							
		9													L-531	25	¾"							
		6													L-532	11	½"							
															L-533	7	⅜"							
														1	L-534	1	¼"							
	1														L-535	1	2"							
		7												2	L-536	9	1½"							
									1	507502-B				2	L-537	1	3"x2"			40	.216x.154	B16.9	SMLS. STEEL	A234 GR
										507503					L-538	1	2"x1½"			3000#	—	B16.11	FORGED STEEL	A 234
	1														L-539	1	2"x1"							
															L-540	2	1½"x1"							
	8	1							1	SUPPLY	SUPPLY			5,7	L-541	10	2"							
	6	3		1			1		3					1,5	L-542	14	1½"							
									6					1	L-543	6	1"							
2		3							1						L-544	7	¾"							
									4						L-545	5	½"							
															L-546	1	⅜"							
														1	L-547	8	¼"							
										507503					L-548	1	2"x1½"x2							
	1														L-549	1	2"x2"x1							
		1									507503-B			1	L-550	2	1½"x1½"x1½							
	1								1						L-551	4	1½"x1"x1½							
	1	1													L-552	2	2"x1½"x2"							
	1														L-553	1	1½"x1½"x1							
1															L-554	1	1"x¾"x¾							
									1						L-555	3	1x1x¾							
															L-656	1	1x½x1"							
1															L-557	1	1x½x¾							
															L-668	1	1¼x1x1							
		1									507503-J			7	L-559	2	1½x1½x1½							
											507503-B			2	L-560	2	1½x1¼x1½							
															L-561	1	2½"					—		
		4	1							SUPPLY					L-562	11	2"					B16.11		
		9		2			8		8						L-563	31	1½"							
		1							10						L-564	16	1"							
2		4													L-565	13	¾"							
		2							16					2	L-566	18	½"							
															L-567	2	¼"							
															L-568	1	1½"							
	1									507503					L-569	1	2"x1½							
															L-570	1	2½"x2"							
															L-571	1	¾"x½"							
										SUPPLY					L-572	1	1½"x1"							
										507503				2	L-573	1	⅜"x¼"							
															L-574	1	½"x⅜"							
		6									507503-B			1	L-675	6	¾"x½"			6000#				
															L-576	1	½"x⅜"			6000#				
										507505					L-577	5	36-1½x½			3000#		—		A105
															L-578	1	36-2"x1½					—		
															L-579	1	36-1½x½					—		
															L-580	2	3"x2½					—		
									2		507505-B			1	L-581	2	6.5"x1½"					—		
	3										507505-F			5	L-582	3	2½"x1½					—		
	1														L-583	3	5.3x¾					—		
									1						L-584	6	8.3x½"					—		
	2								1		507505-G			7	L-585	3	1½"x2"x½					—		
	1														L-586	4	1½-1¼x½					—		
2	4	1							10	507505-E	507505-F			3,4,5	L-587	17	2½"x2"x½					—		
									2	507505					L-588	6	5.3x¾"					—		
										507503					L-589	1	½"					B16.11		A234
									1	SUPPLY					L-590	2	1½"x1"							
															L-591	1	¼"			200#		—	BRONZE	B-62
															L-592	2	2"			3000#		B16.11	FORGED STEEL	A-234
															L-593	2	1"							
															L-594	1	¾"							
										507503					L-595	1	½"x⅜"							
															L-596	1	1½"			2000#		—		A105
	1													4	L-597	1	1½"			300#		—	BRONZE	B-62
										SUPPLY					L-598	2	½"			3000#		B16.11	FORGED STEEL	A-234
															L-599	3	½"							
										507503					L-600	1	2"x2"x1							
														1	L-601	1	1½x1½x1½							
															L-602	1	1½"							
									1	SUPPLY					L-603	3	¾"					—		A105
															L-604	8	½"					—		
															L-605	4	⅜"					—		
										507503					L-606	2	1¼"					—		
															L-607	1	2"x1¼"					B16.14		
															L-608	1	1½"x1"							
															L-609	5	½"x¼"							

PIPING PACKAGE UNIT APPLICATION: UNIT #1 – UNIT #20

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-373-06-3

NOV 1980 10X

FRAME 3 OF 5

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FITTINGS

REQUISITION NO.			CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC.	DESCRIPTION	SERVICE/REMARKS	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG.OR FIG. NO. OR EQUAL
507503					L-610	2	¾"x½"			3000#	—	B16.11	FORGED STEEL	A-105	REDUCING BUSHING SCRD		NOTES 175, 90-93	BONNEY FORGE
↓					L-611	1	½"x⅜"			↓		↓	↓	↓	↓		↓	↓
					L-612	3	2"x¾"											
					L-613	3	½"								PIPE PLUG SQ.HEAD		90-93	
↓					L-614	3	¼"			↓		↓	↓	↓	↓		↓	↓
SUPPLY					L-615	1	2"			40	.154	—	STEEL	A53 TY. F OR S GR.B	NIPPLE (THD ONE END) 4" LG.		—	—
↓					L-616	1	½"			80	.147	—	↓	↓	↓ (THD BOTH ENDS) 6" LG.		—	—
507503	507503-F			4	L-617	5	½"			3000#		B16.11	FORGED STEEL	A 234	HALF COUPLINGS SCRD.		NOTES 90-93	BONNEY FORGE
				~~RES.~~ 6	~~L-618~~	~~1~~	~~4"~~			~~150#~~		~~B.16.15~~	~~BRONZE~~	~~B-62~~	~~PIPE CAP, SCRD W/CHAIN~~		—	—
507503-B				2	L-619	4	2"								~~HOSE NIPPLE WITH [illegible]~~		—	BETH. STD. EF-345
UAO				3	L-620	4	2½"						VARIOUS	—	FLGD HOSE ADAPT. W/CAP & CHAIN	DET. 6A (ITEM NO.10), DET. 6-B FIG#3 & DET 6C	—	BETH STD EF 395
↓				6	L-621	2	1½"			↓			↓	—	↓	DET. 6A ITEM NO 8, DET. 6B FIG#3 & DET 6C	—	↓
507507				3	L-622	1	12"			↓	—	B16.5/FLGS	S.S. BELLOWS FORG. ST. FLGS.	ANSI TY. 321 A105	EXPANSION JOINT-12" F.n.F.	SHORT STYLE	NOTES 90-93	ANACONDA ITEM 77
500022					L-623	1	6"						—	—	DUPLEX STRAINER FLGD		SEE NOTE #96	TATE DWG NO. 1-035-3
507527				1,5	L-624	1	6 GPM			—		—	CAST IRON	—	ROTARY HAND PUMP 1¼" SUCT & DISCH		NOTES 179 90-93	BLACKMER PA-828
507500-A					L-625	1	1½"					—	CAST STEEL	A216 GR WCB	VENT TERMINAL B.W.	W/FLAME SCREEN, BUT W/O COVER	90-93	TATE 52 40 V
↓					L-626	1	4"			150#		FLGS/B16.5	↓	↓	VENT TERMINAL FLGD	↓	↓	TATE 52 40 F
* UAO				~~RES~~ 4	L-627	—	30"x80"						STEEL	A569	16GA. STEEL SHEET		—	—
*				~~RES~~ 4	L-628	1	18"x18"						—		DRIP PAN (MAKE FROM L-627)		SEE DET. "11-E" ON III-17	—
* ↓				~~RES~~ 4	L-629	1	12"x12"						—	↓	↓		SEE DET. "9-C-1" ON III-18	—
				~~RES~~ 6	~~L-630~~	~~1~~	~~—~~						~~—~~	~~—~~	~~ORIFICE~~		~~VENDOR FURNISHED~~	—
UAO				2	L-631	1	1½"			150#		—	STAINLESS STL	TYPE 316.	↓ 3/16" THK - 9/32" ϕ - TYPE A		—	BETH STD 85 EUF
↓				3,7	L-632	2	1½"						STEEL	A415	FUNNEL	MK# 12	—	BETH STD EF-355
				~~RES~~ 6	~~L-633~~	~~2~~	~~¾"~~						↓	↓	~~FUNNEL~~	~~MK# 6~~	—	~~BETH STD EF 355~~
				~~RES~~ 6	~~L-634~~	~~1~~	~~2½"~~								~~DECK COLLAR x 3" LONG~~		—	—
UAO	[illegible]			4,5	L-635	3	2½"			—	—	—	STEEL	A53 TY. E OR S GR.B	DECK SLEEVE 3" LONG		—	BETH. STD. EF-496 FIG. 2
↓				5	L-636	4	1½"			—	—	—	↓	↓	DECK SLEEVE 3" LONG		—	↓
SUPPLY					L-637	1	⅜"			40	—	—	STEEL	A53 TYPE E OR S GR.B	NIPPLE (THD BOTH ENDS) 3" LG.		—	—
507503					L-638	2	¼"			3000#		B16.14	FORGED STL	A 234	PIPE CAP SCRD		NOTES 175, 90-93	BONNEY FORGE
				~~RES~~ 6	~~L-639~~	~~15'-0"~~	~~¼x1½~~			~~—~~			~~STEEL~~		~~FLAT BAR~~		—	—
500053-A					L-640	1	3½			—		—	—	—	BASKET STRAINER		FURN. W/DIESEL GEN.	—
507503					L-641	1	3"			150#		—	CAST STEEL	A 216 GR WCB	SIGHT FLOW INDICATOR FLGD F.F.		NOTES 67, 90-93	ERNST FIG. TF-08
507504					L-642	1	⅜"			—		—	STNLS. STEEL	A276 TY. 316	MALE CONN. ⅜ O.D. TUBE x ⅜ MPT		90-93	SWAGELOK SS-600-1-6
					L-643	1	⅜"			—		—	BRASS	B16	↓		176, 90-93	B-600-1-6
↓					L-644	1	⅜"			—		—	BRASS	B 283	↓ ELBOW		177, 90-93	B-600-2-6
				~~RES~~ 6	~~L-645~~	~~2~~	~~3"~~			~~150#~~			~~VARIOUS~~		~~VIBRATION DAMPENER FLGD-24" P/L~~			~~HEWITT ROBBINS [illegible]~~
				~~RES~~ 6	~~L-646~~	~~1~~	~~2½"~~											
				~~RES~~ 6	~~L-647~~	~~1~~	~~1"~~											
				~~RES~~ 6	~~L-648~~	~~1~~	~~¾"~~											
				~~RES~~ 6	~~L-649~~	~~1~~	~~½"~~								~~PRESSURE TRANSMITTER~~		—	—
				~~RES~~ 6	~~L-650~~	~~1~~	~~¼"~~								~~FLOW CONTROLLER~~		—	—
SUPPLY					L-651	2	8"			40	.322	B16.9	SMLS. STL	A234 GR WPB	ELBOW 90° L.R. B.W.		NOTES 90-93	TUBE TURN PT NO 1
507502					L-652	2	8"				.322				↓ L.T.			1-T
SUPPLY					L-653	3	3½"				.226				↓ L.R.			1
507502					L-654	3	5"				.258				TEE B.W.			20
					L-655	1	3½"				.226				↓			20
					L-656	3	5"x3½"				.258 .226				REDUCER CONC. B.W.			90
					L-657	1	3½"x2"				.226 .154							90
↓					L-658	1	3½"x1½"			↓	.226 .145	↓	↓	↓	↓		↓	90
507505				1	L-659	5	5"x1"			3000#		—	FORGED STEEL	A-105	SOCKOLET-I.P.S. RUN & OUTLET		171, 90-93	BONNEY FORGE
				1	L-660	1	3½"x½"					—						
				1	L-661	2	3½"x½"					—						
				1	L-662	1	3½-3x1¼					—						
				1	L-663	3	4-3½x1½					—						
				1	L-664	4	3½x2"					—						
				1	L-665	1	3½-3x1"					—			↓			
					L-666	1	1"x¾"					—			SOCKOLET RUN & OUTLET-I.P.S.		171, 90-93	
					L-667	2	2"x1½"					—			↓		↓	
	507505-B	507505-F		2,5	L-668	2	2½"x¾"					—			LATOLET		173, 90-93	
					L-669	2	1½"x1½"					—			SOCKOLET		171, 90-93	
					L-670	2	2"x1"					—						
					L-671	1	1½"x1"					—						
↓					L-672	1	¾"x½"					—		↓	↓		↓	
507503					L-673	1	1½"x¾"					B16.11		A234	COUPLING REDUCING S.W.		90-93	
					L-674	1	2"x1											
	507503-B			2	L-675	2	2"x1½"											
					L-676	1	1½"x1"											
↓					L-677	1	¾"x½"			↓		↓	↓	↓	↓		↓	↓
507508-A				1	L-678	1	5"			40	.258	B16.9	SEAMLESS STEEL	A 234 GR WPB	TEE BUTT WELD		↓	TUBE TURN PT. 20
507503-C				1,2	L-679	1	2½"			150#	—	—	CAST STEEL	A 216 GR WCB	SIGHT FLOW INDICATOR FLGD., F.F.; PLAIN TYPE		67, 90-93	ERNST FIG. 215
UAO				2,5	L-680	3	2"			—	—	—	STEEL	A53 TY. E OR S	DECK SLEEVE 5" LONG		—	BETH. STD. EF-496 FIG. 2
507505-B	507505-G			2,7	L-681	2	3-1½			3000#	—	—	FORGED STEEL	A-105	SOCKOLET-I.P.S. RUN & OUTLET		NOTES 171, 90-93	BONNEY FORGE
507503-B				2	L-682	1	1½			↓			↓	↓	HALF COUPLING-S.W.		90-93	↓
507502-B				2	L-683	1	6"x3"			40	.280x.216	B16.9	SEAMLESS STEEL	A 234 GR WPB	CONC. REDUCER-B.W.		90-93	TUBE TURN PT. 90
UAO				2,5	L-684	4	3"			—	—	—	STEEL	A53 TY. E OR S	DECK SLEEVE 5" LONG		—	BETH. STD. EF-496 FIG. 2
507502-B				2	L-685	1	5"			40	.258	B16.9	SEAMLESS STEEL	A 234 GR WPB	180° RETURN BEND-B.W., L.R.		NOTES 90-93	TUBE TURN PT. NO. 7
507503-B				2	L-686	3	1½x1½x1¼			3000#	—	B16.11	FORGED STEEL	A 234	TEE-REDUCING-SW			BONNEY FORGE
SUPPLY				2,3	L-687	5	1½				—				↓			
507503-B				2	L-688	1	1½x1½x1½				—				↓ -REDUCING			
SUPPLY				2	L-689	10	1½				—				90° ELBOW			
507503-B				2	L-690	1	1½x1½x1"				—				CROSS			
507503-B				2	L-691	1	1½x1½x1½			↓	—	↓	↓	↓	↓ -REDUCING			↓
507564				2	L-692	1	1½								FILTER-CARTRIDGE LENGTH 8.0"- SCREEN MESH-400 SPACING-.0015			CUNO TYPE EGFS-1
507502-B				2	L-693	2	2"			40	.154	B16.9	SEAMLESS STEEL	A 234 GR WPB	180° RETURN BEND-BUTT WELD, L.R.			TUBE TURN PT. NO. 7
507503-B				2	L-694	1	1½x1¼			3000#	-	B16.11	FORGED STEEL	A 234	REDUCING BUSHING SCR'D			BONNEY FORGE
507503-B				2	L-695	1	1½x1¼			3000#	-	B16.11	FORGED STEEL	A 234	REDUCING INSERT SOC-WELD			↓
507502-B				2	L-696	1	5"x4"			40	.258 .237	B16.9	SMLS STL	A234 GR WPB	90° REDUCING ELBOW L.R. B.W.			TUBE TURN PT. NO. 1-R
507502-C				2,3	L-697	4	4"x3½			↓	.237 .226	↓	↓	↓	↓			↓
SUPPLY				2,3	L-698	2	2"x1½			3000#	-	B16.11	FORGED ST'L	A-234	RED INSERT SOCKET WELD			
507503-D				2,3	L-699	2	2"x1¼			↓		↓	↓	↓	↓		↓	90
↓				2,3	L-700	1	1½"x1½			3000#	—	B16.11	FORGED STL	A234	REDUCING COUPLING SOCKET WELD		NOTES 90-93	BONNEY FORGE
507505-B				2	L-701	3	3"x1"				1			A105	THREADOLET-IPS RUN & OUTLET		170,	
SUPPLY				2	L-702	3	1¼"				—	-		A105	UNION SOCKET WELD		174,	
507503-B				2	L-703	2	1½x1¼			↓	—		↓	A234	90° ELBOW, REDUCING			↓
507506				2,3	~~L-704~~	~~1~~	~~1¼"~~			~~150#~~	~~—~~	~~—~~	~~STEEL~~	~~A576~~	~~PIPE COUPLING .154x5" MIDDLE RING & 2 EA. 14½" LG. ANCHOR BOLTS W/9" OF THRD.~~			DRESSER STYLE 38
				2	L-705	1	2"			150#	—	—	STEEL	A-576	PIPE COUPLING .154x5" MIDDLE RING & 2 EA. 14½" LG. ANCHOR BOLTS W/9" OF THRD.			
↓				2	L-706	2	3½"				—	—			↓ ⅛"x5"			↓
507503-B				2	L-707	1	1½"x½"			3000#	—	B16.11	FORGED STL	A-105	90° ELBOW, REDUCING SOCKET WELD			BONNEY FORGE
507505-B				2	L-708	2	3"x⅜"				—			↓	SOCKOLET-IPS RUN & OUTLET		171,	
SUPPLY				3	L-709	1	¾"x½"			↓		↓	↓	A 234	REDUCING BUSHING SCR'D		NOTES 90-93	↓
UAO				3,7	L-710	1	6"			150#		—	ST'L	ABS GR.A	ORIFICE ⅜" THK x 1-62" DIA. TYPE "A"			B8 ZUF
507505-C D&E				3,4	L-711	6	5"x¾"			3000#		B16.11	FORGED STL	A105	THREDOLET IPS RUN & OUTLET		NOTES 170, 90-93	BONNEY FORGE
507503-G				3,5	L-712	11	2"					—			UNION SOCKET WELD		NOTES 174 90-93	
				3,5	L-713	13	1½"					—						
				3,5	L-714	1	1¼"					—						
				3,6	L-715	1	1"					—						
↓				3,6	L-716	1	¾"					—			↓		↓	
507503-D				3	L-717	1	1½"					B16.11	↓	↓	SCR'D PIPE CAP		175	↓
SUPPLY				3	L-718	2	1½"			40		—	STEEL	A53 TYPE F OR S GR.A	NIPPLE (THD ONE END) 4" LG			
↓				3	L-719	2	1"			↓		—	↓	↓	↓			

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-3

FRAME 4 OF 5

LIST OF FITTINGS

ALT NO	FITTING IDENT. NO.	AMT REQ'D	SIZE	DESIGN CRITERIA PSI	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD	MATERIAL	ASTM SPEC	DESCRIPTION	SERVICE	SPECIAL NOTES FROM REF.#1	MANUFACTURER DWG. OR FIG. NO. OR EQUAL
5	L-720	1	4"x2"			3000#		—	FORGED STL	A-105	SOCKOLET I.P.S. RUN & OUTLET		NOTES 171, 90-93	BONNEY FORGE
5	L-721	1	1¼"x1"					B16.11		A-234	REDUCING INSERT - S.W.		90-93	
	L-722	3	3"x[illegible]					—		A-105	SOCKOLET I.P.S. RUN & OUTLET		171, 90-93	
	L-723	1	¾"					—	STEEL	[illegible]	DK. SLEEVE 8" LG.			BETH STD EF496 FIG2
	L-724	1	¾"					B16.11	FORGED STEEL	A234	COUPLING S.W.		NOTES 90-93	BONNEY FORGE
	L-725	20	2½"			—			STEEL	A53 TY E GR B	PIPE SLEEVE			BETH. STD. EF-496 FIG
	L-726	2	2"			—								
	L-727	65	3"			—		—		[illegible]				
7	L-728	2	4"				—		BRONZE	B-61	LIQUID LEVEL GAUGE GLASS SCRD 2-8" C TO C AUTO TYPE		NOTES 90-93	JOHN C. ERNST #411-04
	L-729	3	2"	—	—	3000#	—	B16.11	STEEL	A-234	COUPLING - S.W.		NOTES 90-93	BONNEY FORGE
	L-730	35	5"							[illegible]	PIPE SLEEVE			BETH. STD. EF-496 FIG #1
	L-731	1	1¼"x¾"	—	—	—		B16.11	FORGED STEEL	A-105	BUSHING - SCRD		NOTES 175, 90-93	BONNEY FORGE
	L-732	1	¾"	—	—	3000#		B16.11		A-234	90° ELBOW - SCRD			
	L-733	1	1½"			3000#			FORGED STL		HALF COUPLING - SCRD			
	L-734	20	4"				—	—	STEEL	[illegible]	PIPE SLEEVE			BETH. STD. EF-496 FIG
	L-735	10	3½"					—		[illegible]				
5	L-736	2	1¼"			150#			STAIN. STL	AISI 316	ORIFICE PLATE FOR 1¼" PIPE .044 Ø TYP A	¼" THK.		BETH. STD. B-5.3UF
5	L-737	2	1¼"			150#					.081			
5	L-738	2	1"x½"			3000#		B16.11	FORGED STL	A105	BUSHING SCR'D		NOTES 90-93	BONNEY FORGE
5	L-739	1	1¼"x1¼"			3000#		B16.11		A234	COUPLING REDUCER S.W.			
5	L-740	1	5"-4x2"			3000#				A105	LATOLET - S.W. IPS. RUN & OUTLET		# 173	
5	L-741	1	1½"			3000#		B16.11			SQ HEAD PIPE PLUG			
5	L-742	5'-0"	½"			—		—	STAIN STL	A-276 TY 316	SQ BAR			
5	L-743	2	1½"x1½"x1½"			3000#	—	B16.11	FORGED STL	A-105	TEE, REDUCING SW x F.P.T. x S.W.		NOTES 90-93	BONNEY FORGE
	L-744	1	1½"x1½"x1"				—				SOC. WELD			
7	L-745	1	1½"x1½"x1"	—	—		—							
7	L-746	5	1½"	—	—						SCR'D			
7	L-747	1	1"x¾"	—	—		—	B			INSERT RED. - S.W.			
7	L-748	1	2"x1"	—	—									
7	L-749	1	2"x½"	—	—		—							

PIPING PACKAGE UNIT APPLICATION

UNIT #1, UNIT #2, UNIT #3, UNIT #4, UNIT #5, UNIT #6, UNIT #7, UNIT #8, UNIT #9, UNIT #10, UNIT #11, UNIT #12, UNIT #13, UNIT #14, UNIT #15, UNIT #16, UNIT #17, UNIT #18, UNIT #19, UNIT #20

STRUCTURAL MODULAR UNIT APPLICATION

LIST OF FITTINGS

STRUCTURAL MODULAR UNIT APPLICATION

FITTING IDENT. NO.	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT 11	UNIT 12	UNIT 13	UNIT 14	UNIT 15
L-720															1
L-721															1
L-722															3
L-723															1
L-724															1
L-725			15					5							
L-726			2												
L-727			35												30
L-728								2							
L-729			5												
L-730	13														22
L-731			1												
L-732			1												
L-733															1
L-734				20											
L-735				10											
L-736															2
L-737															2
L-738				3											
L-739			1												
L-740															1
L-741															1
L-742															5'-0"
L-743			2												
L-744				1											
L-745				1											
L-746			5												
L-747			1												
L-748			1												
L-749			1												

REQUISITION NO.		CODE NO. (FUTURE USE)	ALT. NO.	FITTING IDENT. NO.	AMT. REQ'D.	SIZE	DESIGN CRITERIA P.S.I.	DESIGN CRITERIA °F	SCH NO.	WALL THK.	ANSI DIM. STD.	MATERIAL	ASTM SPEC.	DESCRIPTION	
507505-C			3	L-720	1	4"x2"			3000#		—	FORGED ST'L	A-105	SOCKOLET I.P.S. RUN & OUTLET	
SUPPLY			3	L-721	1	1¼"x1"					B16.11		A-234	REDUCING INSERT - S.W.	
507505-C			3	L-722	3	3"x2"					—	↓	A-105	SOCKOLET I.P.S. RUN & OUTLET	
UAO			3	L-723	1	⅜"					—	STEEL	A-53 TY.E GR.B	DK. SLEEVE 8" LG.	
SUPPLY			3	L-724	1	⅜"			↓		B16.11	FORGED STEEL	A 234	COUPLING S.W.	
UAO			4	L-725	20	2½"			—	—	—	STEEL	A53 TY E GR B	PIPE SLEEVE	
			4	L-726	2	2"			—	—	—		↓		
↓			4,5,6	L-727	65	3"			—	—	—	↓	GR. ASTM 106 H.F.	↓	
507525	507525-A		4,7	L-728	2	4"				—		BRONZE	B-61	LIQUID LEVEL GAUGE GLASS, SCRD. 2'-8" C TO C AUTO. TYPE	
SUPPLY			4	L-729	5	2"	—	—	3000#	—	B16.11	STEEL	A-234	COUPLING - S.W.	
UAO			4,6	L-730	35	5"	—		—	—	—	↓	A53 TY.E OR GR.B	PIPE SLEEVE	
SUPPLY			4	L-731	1	1¼"x¾"	—	—	—	—	B16.14	FORGED STEEL	A-105	BUSHING - SCRD.	
↓			4	L-732	1	¾"	—	—	3000#	—	B16.11	↓	A-234	90° ELBOW - SCRD.	
507503-F			4	L-733	1	1½"			3000#	—	↓	FORGED STL.	↓	HALF COUPLING - SCRD.	
UAO			4	L-734	20	4"	—	—	—	—	—	STEEL	A53 TY.E OR GR.B	PIPE SLEEVE	
↓			4	L-735	10	3½"	—	—	—	—	—	↓	ASTM GR. 106 H.F.	↓	
UAO			5	L-736	2	1¼"	—	—	150#	—	—	STAIN-ST'L	AISI 316	ORIFICE PLATE FOR 1¼" PIPE .044 Ø TYP A	¼" THK.
↓			5	L-737	2	1¼"	—	—	150#	—		↓	↓	.081	↓
507503-G			5	L-738	3	1"x½"	—	—	3000#	—	B16.11	FORGED ST'L	A105	BUSHING SCR'D	
↓			5	L-739	1	1½"x1¼"	—	—	3000#	—	B16.11		A234	COUPLING REDUCER S.W.	
507505-F			5	L-740	1	5"x4"x2"	—	—	3000#	—	—		A105	LATOLET - S.W. I.P.S. RUN & OUTLET	
507503-G			5	L-741	1	1½"	—	—	3000#	—	B16.11	↓	↓	SQ HEAD PIPE PLUG	
507542			5	L-742	5'-0"	½"	—	—	—	—	—	STAIN ST'L	A-276 TY 316	SQ BAR	
507503-G			5	L-743	2	1½"x1½"x1½"	—	—	3000#	—	B16.11	FORGED STL.	A-105	TEE, REDUCING SW x F.P.T. x S.W.	
↓			5	L-744	1	1½"x1½"x1"	—	—		—				SOC. WELD	
507503-M			7	L-745	1	1¼"x1¼"x½"	-	-		-					
SUPPLY			7	L-746	5	1½"	-	-		-				SCR'D	
			7	L-747	1	1"x¾"	-	-		-	B			INSERT RED. - S.W.	
			7	L-748	1	2"x1"	-	-		-					
↓			7	L-749	1	2"x½"	-	-	↓	-	↓	↓	↓	↓	

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NOV 1980 10X

BUILDERS PLAN NO. M4650-373-06-3

FRAME 5 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-376-05-2

FRAME 1 OF 4

ERIAL BILL FOR ONE (I) SHIP

FITTINGS (CONT'D)

QTY	SIZE I.P.S.	DESCRIPTION	MATERIAL & ASTM SPEC	REMARKS	ANSI	MANUFACTURER	REQ NO.
1	1½"x1½"x	EE - SILB	CAST BRONZE B-62	[illegible]	—	FLAGG-FIG.# 5021	504703-C
4	1¼"x1¼"x				—		
2	2"		STEEL - ASTM A-53	[illegible]	—	C&C MACH. CO. NO. 257	504719
2	3"		STEEL - ASTM A-53		—	C&C MACH. CO. NO. 250	
1	1½"	NION SILB	CAST BRONZE ASTM B62	[illegible]	—	FLAGG FLOW FIG. 5201	504703
1	⅜"x¼"	SHING SILB	CAST BRONZE ASTM B-62	[illegible]	—	FLAGG FLOW FIG. 5057	504703
5	¾"	PPLE	BRASS ASTM B-43	THD. ONE END	—		SUPPLY
1'-0"	1½"	AP, SCRD	CAST BRONZE ASTM B62	[illegible]	BRASS	FLAGG FLOW FIG. 4150	SUPPLY
4	1¼"						
6	1¼"	NION SILB		[illegible]	—	FLAGG FLOW FIG. 5201	504703
8	¾"	0° STREET ELL MPT x SILB		[illegible]	—	FLAGG FLOW FIG. 5108	
1	1½"x1"	ED. COUPL. SILB		[illegible]	—	FLAGG FLOW FIG. 5050	
3	1¼"x¾"						
2	2"x¾"	SCRD x SILB		[illegible]	—	FLAGG FLOW FIG. 5052	
1	1"	NION SILB		[illegible]	—	FLAGG FLOW FIG. 5201	
1	1½"	IPPLE	BRASS ASTM B-43	THD. ONE END	—		SUPPLY
2	3"	OUPLING - SILB	CAST BRONZE - ASTM B62	[illegible]	—	FLAGG FLOW FIG. 5050	504703
6	¾"	NION SILB			—	FLAGG FLOW FIG. 5201	
2	2"	COUPLING - SILB	CAST BRONZE ASTM B62	[illegible]	—	FLAGG FLOW FIG. 5050	504703
1	¼"	IPPLE	BRASS ASTM B-43	PLAIN BOTH ENDS	—		SUPPLY
1	2"x2"x	EE - SILB	CAST BRONZE B-62	[illegible]	—	FLAGG-FIG.# 5021	504703-C
1	½"x¼"	USHING - SILB		SEE NOTES (8),(10)-(13) REF.#1		FLAGG-FIG.# 5057	
1	1½"x	0° RED ELL	CAST BRONZE ASTM B62	[illegible]	—	FLAGG FLOW FIG. 5001	504703
1	3"x2"				—		
1	3"x3"x1	EE - SILB	ASTM B-62	[illegible]	—	FLAGG-FIG.# 5021	504703-F
1	2½"x1½"x	RED TEE - SILB	ASTM B62	[illegible]	—	FLAGG FLOW FIG. 5021	504703
1	1"	0° STREET ELL MPT x SILB		[illegible]	—	FLAGG FLOW FIG. 5108	
2	2"	UNION - SILB		[illegible]	—	FLAGG FLOW FIG. 5201	

R HEADER

WER HEADER

LE

GENERAL NOTES

1-FOR INSULATION SPECIFICATIONS SEE REF.#6
2-FOR PNEUMATIC CONTROL PIPING SEE REF.#8
3-BENDS IN COPPER PIPE SHALL HAVE A RADIUS OF AT LEAST THREE (3) TIMES THE PIPE DIAMETER
4-PREHEATER AND REHEATER UNITS ARE LISTED PER "ITEM NO." ON REF.#7
5-FOR LABEL PLATES SEE REF.#5
6-ALL STEAM TRAPS SHALL BE 6" BELOW THE UNIT DRAINED WHERE POSSIBLE. 24" OF BARE PIPE SHALL BE BETWEEN THE UNIT AND THE TRAP.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	3-24-77	4	1-ITEMS F-26, F-27, F-51, & F-57 CHANGED FROM BRAZOLETS TO TEES, TO COMPLY WITH U.S.C.G. LETTER SER: 3803 DATED 15 MARCH 1977 2-ITEM F-52 ADDED	P.G.	G.G.SHARP LTR. DATED 5-9-77
2	2-21-78		ADDED PIPE SK. Nos	R.W.P.	
3	8-2-79		ADDED V-11 PER YIS 4650-22543	R.W.F.	[illegible]

HULL	DESIGN	CHARGE
4651		4650
4650	27,340 DWT CONTAINERSHIP	4650

JOB NO. 376

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8"=1'0" DATE DEC. 23, 1976
DRAWN C.B./P.G. APPROVED
TRACED APPROVED
CHECKED G.McC. APPROVED [illegible]

PLAN NO. M-4650-376-05-2 ALT. NO. 3

STEAM HEATING SYSTEM
BOAT DECK & ABOVE
&
L/M

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	2-9-77				
A.B.S.	╳				
U.S.C.G.	3-15-77				
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				

NO.	PLAN NO.	TITLE
8	HONEYWELL, MINN.	A.C. PNEUMATIC CONT. SYS. DIAG.
7	-191-15-1, 2, & 3	HVAC A/D SUN DK. & ABOVE
6	-577-1	INSUL. & LAGGING
5	-376-05-7	LABEL PLATES
4	-376-05-3	STM. HTG. SYS. INSIDE MACHY. RM. AFT FR. 157 ABOVE L/M
3	-412-2	STD. GAGE ASSY.-GAGE PIPING & L/M
2	M-4650-412-4	LIST OF GAGES
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURN. MAT'L

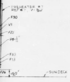
REFERENCE PLANS

M-744

ALTERATION	0	1	2	3
ENGINEERING DISTRIBUTION	4650-51 1-3-77	4650-51 3-30-77	4650-51 REPL. 2-27-78	4650-51 REPL. 8-17-79
OWNERS	3	3		3
AMERICAN BUREAU				
LLOYD'S R.S.				
U.S.M.A.				
U.S. NAVY				
U.S.C.G.	3			3
JOINER CONT'R.				
OWNER'S INSP.		1	1	1
AM. BU. INSP.				
LLOYD'S INSP.				
U.S.M.A. INSP.		1	1	1
U.S. NAVY INSP.				
U.S.C.G. INSP.				
HULL DRAFT.-21	1	1	1	1
MACH. DRAFT.-22	2	2	2	2
ELEC. DRAFT.-23	1	1	1	1
OUTFIT. DRAFT.-25				
ESTIMATING				
DOUGHERTY CTD	1	1	1	1
PRODUCTION (BCD)				
ORDER DEPT.				
JOINER CONT. YARD				
WILLIAMS-PURCHASING	2			
TOTAL ENG'R. DIST.	16	12	7	13
YARD DISTRIBUTION	4-3-77	[illegible]	[illegible]	
YARD OFFICE	1	1	1	
GEO. SANDERS	1	1		
PIECE RATE-11	1	1	1	
TEST DEPARTMENT				
BRICK [illegible]	1	1		
PLANNING	1	1	1	
GROUND ASSEMBLY	2	2	2	
35 DEPT.	2	2	2	
P. MCNAIR	1	1		
H. LEVY	1	1		
NO. WAY				
NO. WAY				
NO. WAY				
NO. WAY				
STRUCT. SUPER.	2	2	2	
OPTICAL DETAIL-45	2	2	2	
WET DOCK				
PIPE SHOP-52	4	4	4	
OUTFIT. #1 PIER	1	1	1	
PIPE DRAFT-52	2	2	2	
BOILER SHOP-58	1	1	1	
OUTSIDE MACH.-60	2	2	2	
Q-MAT'L	1	1	1	
ELECTRIC SHOP-70				
SHEET MET. SHOP-74				
COPPER SHOP-51				
PAINT SHOP-75	1	1	1	
WELDING				
QUALITY ASSURANCE	1	1		
MOLD LOFT-41	1	1	1	
BRACKET SHOP				
MAIN RECORDS	1		1	
R. ADELMAN			1	
SHIP SUPT.			1	
TOTAL YARD DIST.	30	28	27	

ALT 1
ALT 2
ALT 3

SQ. FT.



MATERIAL BILL FOR ONE (I) SHIP

REV	PC. NO.	QTY	SIZE	SCH/ PRES	DESCRIPTION	MATERIAL & ASTM SPEC.	REMARKS	ANSI	MANUFACTURER	REQ NO.
	P1	30'	¾" I.P.S.	.065 THK.	SEAMLESS TUBING	COPPER DRAWN TEMPER ASTM B75 ALLOY 122	1.050" O.D. SEE NOTE 128 REF. 1	—	——	504745
	P2	65'	1"				1.315"	—	——	
	P3	5'	1¼"				1.660"	—	——	
	P4	15'	1½"				1.900"	—	——	
	P5	55'	2"				2.375"	—	——	
	P6	18'	2½"				2.875"	—	——	
	P7	30'	3"				3.500"	—	——	
	P8	12'	¼"				0.540"	—	——	
	P9	18"	1"	REG.	PIPE .126 WALL THK	BRASS ASTM B-43	1.315" SEE NOTE 132 REF. 1 THD. ONE END	—	——	504748
	P10	10'	1¼"	REG.	.146 WALL THK		1.660" SEE NOTE 132 REF. 1	—	——	
					VALVES					
	V1	6	¼" I.P.S.	200#	GLOBE SILB U.E.	C. BRONZE /W MONEL TRIM ASTM B61	SEE NOTES 128,181,90-93 REF. 1	—	LUNK'NH'M'R FIG. 2100	504700
	V2	5	⅜"					—	LUNK'NH'M'R FIG. 2100	
	V3	4	¾"		GATE - SILB. U.E.			—	LUNK'NH'M'R FIG. 2102	
	V4	1	1"					—	LUNK'NH'M'R FIG. 2102	
	V5	4	1¼"		GLOBE	C. BRONZE/W MONEL TRIM		—	LUNK'NH'M'R FIG. 2100	
	V6	1	1½"			C. BRONZE/W MONEL TRIM		—	LUNK'NH'M'R FIG. 2100	
	V7	4	¾"		PNEUM. CONTROL SILB. U.E.		HONEYWELL #V5011C 1599	—	MINN. HONEYWELL	500028-8
	V8	1	1"				#V5011C 1623	—	MINN. HONEYWELL	500028-8
3	V-11	3	1"		SWING CHECK SILB U.E.	CAST BRONZE MONEL TRIM ASTM B-61	SEE NOTES 28,90-93	—	LUNK'NH'MR FIG 2103	504700-B
					FITTINGS					
	F1	12	¾"	200#	90°ELL - SILB.	CAST BRONZE · ASTM B62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5001	504703
	F2	19	1"					—		
	F3	2	1¼"					—		
	F4	1	1½"					—		
	F5	7	2"					—		
	F6	4	3"					—		
	F8	2	1"x¾"x¾"		RED. TEE - SILB.	CAST BRONZE ASTM B-62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5021	504703
	F10	2	2"x1¼"x1¼"		RED. TEE - SILB.	CAST BRONZE ASTM B-62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5021	504703
	F11	4	1¼"x¼"x1¼"		SILB. x SILB. x SCRD		SEE NOTES 175,181,90-93. REF. 1	—	FLAGG FLOW FIG. 5023	
	F12	1	2½"x2"x2"		SILB.		SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5021	
	F13	1	1½"x⅜"x1½"		SILB. x SILB. x SCRD		SEE NOTES 175,181,90-93 REF. 1	—	FLAGG FLOW FIG. 5023	
	F14	1	1½"x1"x1"		SILB.		SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5021	
	F16	4	1¼"		STRAINER - SILB. MONEL SCREENS W/.033 PERF	CAST BRONZE ASTM B-62	SEE NOTES 181,90-93 REF. 1	—	MUELLER FIG. 352?2	504708
	F17	1	1½"					—		
	F18	4	¾"	—	FLOAT TRAP, SCRD. (WITH THERMOSTATIC VENT)	CAST IRON ASTM A126	SEE NOTES 175,181,90-93 REF. 1	—	SARCO TYPE FT-30	504710
	F19	1	1"	—				—		
	F20	3	1¼"x¾"	200#	90° RED. ELL SILB	CAST BRONZE ASTM B62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5001	504703
	F21	2	2"x1¼"		SCRD x SILB		SEE NOTES 175,181,90-93 REF. 1	—	FLAGG FLOW FIG. 5003	
	F23	2	2½"x1½"	200#	90° RED. ELL, SILB	CAST BRONZE ASTM B-62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5001	504703

MATERIAL BILL FOR ONE (I) SHIP

FITTINGS (CONT'D)

REV	PC. NO.	QTY	SIZE I.P.S.	SCH/ PRES	DESCRIPTION	MATERIAL & ASTM SPEC.	REMARKS	ANSI	MANUFACTURER	REQ NO.
1	F26	1	1½"x1½"x1"	200#	TEE - SILB.	CAST BRONZE B-62	SEE NOTES 181,90-93 REF. 1	—	FLAGG-FIG. #5021	504703-C
1	F27	4	1¼"x1¼"x¾"					—		
	F28	2	2"	—	COMPRESSION COUPLING	STEEL - ASTM A53 - 5" LG	SEE NOTES 90-93 REF. 1	—	C.B.C. MACH. CO. NO. 251	504719
	F29	2	3"	—		STEEL - ASTM A513-69 TY.3 5"LG.		—	C.B.C. MACH. CO. NO. 250	
	F30	1	1½"	200#	UNION, SILB.	CAST BRONZE ASTM B62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5201	504703
	F33	1	⅜"x¼"	200#	BUSHING, SILB	CAST BRONZE ASTM B-62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5057	504703
	F34	5	¾"	REG.	NIPPLE - 3" LG.	BRASS ASTM B-43	THD. ONE END	—		SUPPLY
	F36	1	1½"	125#	CAP, SCRD.	CAST BRONZE ASTM B62	SEE NOTES 90-93 REF. 1	B16.15	FLAGG FLOW FIG. 4145	SUPPLY
	F37	4	1¼"							
	F38	6	1¼"	200#	UNION, SILB		SEE NOTES 181 90-93 REF. 1	—	FLAGG FLOW FIG. 5201	504703
	F39	8	¾"		90° STREET ELL MPT x SILB		SEE NOTES 175,181,90-93 REF. 1	—	FLAGG FLOW FIG. 5108	
	F40	1	1½"x1"		RED. COUPL. SILB		SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5050	
	F41	3	1¼"x¾"					—		
	F42	2	2"x¾"		SCRD x SILB		SEE NOTES 175,181,90-93 REF. 1	—	FLAGG FLOW FIG. 5052	
	F43	1	1"		UNION SILB		SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5201	
	F44	1	1½"	REG.	NIPPLE - 6" LG.	BRASS ASTM B-43	THD. ONE END.	—		SUPPLY
	F46	2	3"	200#	COUPLING - SILB.	CAST BRONZE - ASTM B62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5050	504703
	F47	6	¾"		UNION SILB			—	FLAGG FLOW FIG. 5201	
	F49	2	2"	200#	COUPLING - SILB	CAST BRONZE ASTM B62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5050	504703
	F50	1	¼"	REG.	NIPPLE - 3" LG.	BRASS ASTM B-43	PLAIN BOTH ENDS	—		SUPPLY
1	F51	1	2"x2"x½"	200#	TEE - SILB.	CAST BRONZE B-62	SEE NOTES 181,90-93 REF. 1	—	FLAGG-FIG. #5021	504703-C
1	F52	1	½"x¼"	200#	BUSHING - SILB.		SEE NOTES 181,90-93 REF. #1		FLAGG-FIG. #5057	
	F53									
	F54									
	F55	1	1½"x1"	200#	90° RED ELL	CAST BRONZE ASTM B-62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5001	504703
	F56	1	3"x2½"					—		
1	F57	1	3"x3"x1½"	200#	TEE - SILB.	ASTM B-62	SEE NOTES 181,90-93 REF. 1	—	FLAGG-FIG. #5021	504703-C
	F58	1	2"x1½"x1"	200#	RED. TEE - SILB	ASTM B62	SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5021	504703
	F59	1	1"		90° STREET ELL MPT x SILB		SEE NOTES 175,181,90-93 REF. 1	—	FLAGG FLOW FIG. 5108	
	F60	2	2"		UNION - SILB		SEE NOTES 181,90-93 REF. 1	—	FLAGG FLOW FIG. 5201	

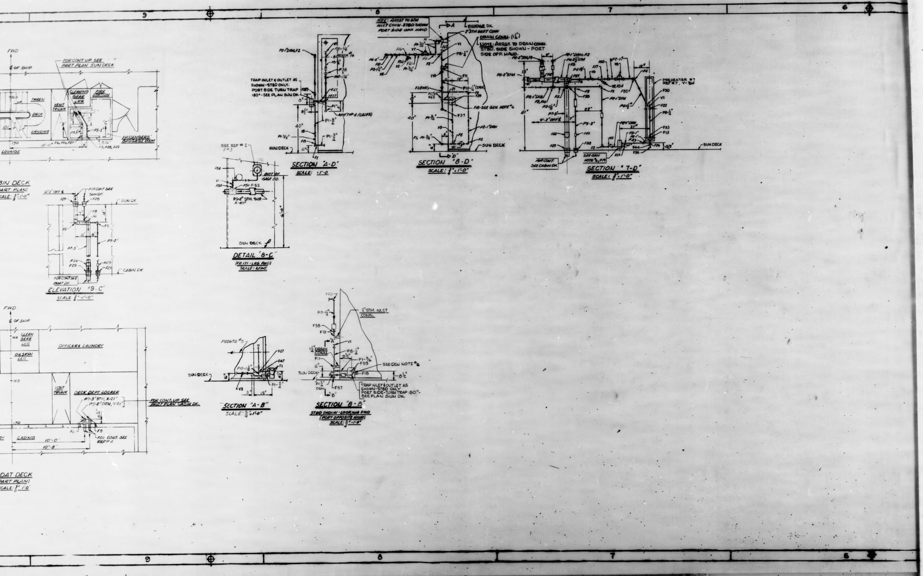
1-FOR INS
2-FOR PNE
3-BENDS
TIMES T
4-PREHEA
5-FOR LA
6-ALL ST
24'OF

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-376-05-2

FRAME 2 OF 4


9
8
7
6
FWD
℄ OF SHIP
FOR CONT. UP SEE PART PLAN SUN DECK
CLEANING GEAR LKR
FIRE STATION
VENT TRUNK
TWEEN
DECK
LANDING
PASSENGERS' BAGGAGE ROOM
LOUNGE
170
…BIN DECK
(…ART PLAN)
SCALE: 3/8"=1'-0"
SUN DK
CABIN DK
FOR CONT SEE BOAT DK.
ELEVATION "9-C"
SCALE 3/4"=1'-0"
SEE REF # 2
SUN DECK
DETAIL "8-C"
(FR 171 - LKG FWD)
SCALE: NONE
TRAP INLET & OUTLET AS SHOWN - STBD ONLY. PORT SIDE TURN TRAP 180° - SEE PLAN SUN DK.
SUN DECK
SECTION "A-D"
SCALE: 1"=1'-0
NOTE: ARRGT. TO STM INLET CONN. - STBD SHOWN PORT SIDE OPP. HAND
BRIDGE DK.
2" STM INLET CONN
DRAIN CONN. (1¼")
NOTE: ARRGT. TO DRAIN CONN. STBD. SIDE SHOWN - PORT SIDE OPP. HAND.
F18 - SEE GEN. NOTE #6
SUN DECK
SECTION "8-D"
SCALE: 3/4"=1'-0"
PREHEATER #7
SUN DECK
FOR CONT. SEE CABIN DK.
SEE GEN NOTE #6
SECTION "7-D"
SCALE: 3/4"=1'-0"
FWD
℄ OF SHIP
CLEAN GEAR LKR
OILSKIN LKR
OFFICERS LAUNDRY
VENT TRUNK
DECK DEPT LOCKER
P7-3" STM, X-21"
P5-2" DRN, X-21"
FOR CONT. UP SEE PART PLAN CABIN DK.
FOR CONT. SEE REF #4
CASING
10'-0"
10'-8"
…OAT DECK
(…ART PLAN)
…CALE: 3/8"=1'-0"
PREHTR #5
SUN DECK
SECTION "A-B"
SCALE: 3/4"=1'-0"
2" STM. INLET CONN.
1¼" DRAIN CONN.
SEE GEN NOTE #6
TRAP INLET & OUTLET AS SHOWN - STBD ONLY PORT SIDE - TURN TRAP 180°. SEE PLAN SUN DK.
SECTION "8-B"
STBD SHOWN - LOOKING FWD
(PORT OPPOSITE HAND)
SCALE: 3/4"=1'-0"

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BUILDERS PLAN NO. M4650-376-05-2

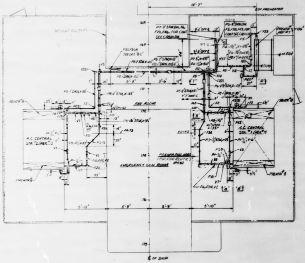
FRAME 3 OF 4

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

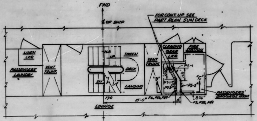
BUILDERS PLAN NO. M4650-376-05-2

FRAME 4 OF 4



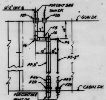
14'-7"
℄ OF PREHEATER
INSULATION (TYP)
P7-3" STM DN, F6, F29, F46, FOR CONT. SEE CABIN DK.
P5-2" DRN DN, F5, F28, F29, FOR CONT. SEE CABIN DK.
PRENTR #7 V-36"
FAN ROOM
EMERGENCY GEN. ROOM
A.C. CENTRAL STA. #2 (REF. #1)
A.C. CENTRAL STA. #1 (REF. #1)
PRENTR DULL ORAN. (TYP. FOR REHTR.) (P1-3)
REHTR #11
PRENTR #8
PRENTR #5
5'-10"
5'-9"
3'-9"
5'-10"
168
169
170
171
172
173
174
175
176
178
℄ OF SHIP

SUN DECK
SCALE: 3/8"=1'-0"



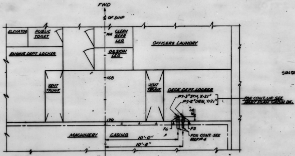
FWD
℄ OF SHIP
FOR CONT. UP SEE PART PLAN SUN DECK
LINEN LKR.
PASSENGERS' LAUNDRY
VENT TRUNK
UP
TWEEN DECK
DN
LANDING
VENT TRUNK
CLEANING GEAR LKR.
FIRE STATION
P5-1
P5-2
PASSENGERS' BAGGAGE ROOM
10'-0"
F6, F46, F29
F5, F28, F29
8 1/4"
170
LOUNGE

CABIN DECK
(PART PLAN)
SCALE: 3/8"=1'-0"



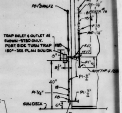
FOR CONT. SEE SUN DK.
F28
SUN DK.
P5
P5-2"
P7-3"
F46
F29
FOR CONT. SEE BOAT DK.
CABIN DK.

ELEVATION "9-C"
SCALE: 3/4"=1'-0"



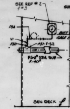
FWD
℄ OF SHIP
ELEVATOR
PUBLIC TOILET
CLEAN GEAR LKR.
OFFICERS LAUNDRY
OILSKIN LKR.
ENGINE DEPT. LOCKER
168
VENT TRUNK
VENT TRUNK
DECK DEPT. LOCKER
P7-3" STM, X-21"
P5-2" DRN, X-21"
FOR CONT. UP SEE PART PLAN CABIN DK.
170
MACHINERY CASING
10'-0"
10'-8"
F6
F5
FOR CONT. SEE REF. #4

BOAT DECK
(PART PLAN)
SCALE: 3/8"=1'-0"



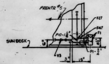
P2-1" DRN, F2
TRAP INLET & OUTLET AS SHOWN - STBD ONLY. PORT SIDE TURN TRAP 180° - SEE PLAN SUN DK.
40"
P1-3/4"
P1-3"
P1-3/4"
SUN DECK
F1

SECTION "A-D"
SCALE: 1"=1'-0"



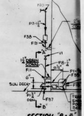
SEE REF. #2
F34
V1
F50
P31-F-52
P5-2" STM. SUP. X-40"
SUN DECK

DETAIL "8-C"
(FR. 171 - LKG. FWD)
SCALE: NONE



PRENTR #5
F27
F47
F1
SUN DECK
P10-1 1/4"
V3
15"
P1-3/4"

SECTION "A-B"
SCALE: 3/4"=1'-0"



F20
P3-1/4"
F38
F31
V1
"A"
1 1/4" DRAIN CONN.
P8-1/4"
F11
SUN DECK
F87

SECTION "B-B"
STBD SHOWN - LOOKING FWD
(PORT OPPOSITE HAND)
SCALE: 3/4"=1'-0"

MATERIAL BILL FOR ONE (I) SHIP

REV	PC. NO	QTY	SIZE (IPS)	SCH/PRES	DESCRIPTION	MATERIAL & SPEC	REMARKS AND SPECIAL NOTES FROM REF. 1	ANSI	MANUFACTURER	REQ. NO.
						PIPE & TUBING				
	P-1	10'	8"	40	PIPE	CARBON STEEL ASTM A-53 TYPE "E" OR "S" GR. B	NOTES 128 & 135	B36.10		504744
	P-2	96'	3"	.065"	SEAMLESS TUBING	COPPER ASTM B75 TYPE "122"	3.500" O.D. SEE NOTE 126	—		504745-A
	P-3	120'	2"				2.375"	—		
	P-4	275'	3/4"				1.050"	—		
	P-5	180'	1/2"				.840"	—		
	P-6	[illegible]	1/4"				.540"	—		
	P-7	6'	1 1/4"				1.660"	—		
3	P-8	200'	2"	.154	PIPE	CARBON STEEL ASTM A-106 GR. B	NOTES 128, 135 & 136	B36.10		504744-A
						VALVES				
	V-1									
	V-2									
	V-3	1	3/4"	200#	GATE, SILB. U.E.	CAST BRONZE ASTM B-61 W/BRONZE TRIM	NOTES 1, 28, 90-93	—	LUNKENHEIMER FIG. 2102	504700-A
	V-4	4	1/2"					—	FIG. 2102	
	V-5	2	1/2"		SWG CHECK U.E. SILB			—	FIG. 2103	
	V-6	1	1/4"		GLOBE, SILB.			—	FIG. 2100	
	V-7	1	3/4"		U.E.			—	FIG. 2100	
2	V-8	1	1"	—	STEAM CONTROL VALVE		FOR STEER. GEAR FLAT UNIT HEATER		ORDERED BY SPEC.	
2	V-9	1	3/4"	200#	GLOBE VALVE SCRD.	BRONZE-ASTM B-61	NOTES- 1, 90-93	B2.1	POWELL FIG. # 110	Supply
						FITTINGS				
	F-2	2	3"	200#	90° ELL, SILB	CAST BRONZE ASTM B-62	NOTES 181, 90-93	—	FLAGG FIG. 5001	504703-A
	F-3	3	2"					—		
	F-4	16	3/4"					—		
	F-5	8	1/2"					—		
	F-6	1	3"	—	THREADLESS END COMPRESSION COUPLINGS	STEEL ASTM A513	7" LONG	—	C.B.C. TYPE 250	504719-A
	F-7	1	2"	—		STEEL ASTM A-53		—	C.B.C. TYPE 251	
	F-8	4	3/4"	—				—		
	F-9	4	1/2"	—				—		
	F-10									
	F-11	1	3"	40	TEE, BW	CARBON STEEL ASTM A-234 GR WPB	NOTES 90-93	B16.9	TUBE TURN PT #20	504702
1	F-12	1	3"x3"x3/4"	200#	TEE-SILB.	CAST BRONZE-ASTM. B-62	181, 90-93	—	FLAGG-FIG. # 5021	504703-B
	F-13	1	1 1/4"x3/4"	200#	90° RED. ELL SCRD. x SILB	ASTM B-62	175, 181, 90-93	—	FLAGG FIG. 5003	504703-A
	F-14	1	1/2"		UNION SILB.		181, 90-93	—	FIG. 5201	
	F-15	1	2"x1/2"x2"		RED. TEE			—	FIG. 5021	
	F-16	1	2"		UNION			—	FIG. 5201	
	F-17	1	1/2"x3/4"x1/2"		RED. TEE			—	FIG. 5021	
	F-18	2	1/2"		STRAINER "Y" TYPE SILB. MONEL SCREENS W/.033 PERF.	ASTM B62		—	MUELLER FIG. 352 1/2	504708-A
	F-19	4	3/4"x1/2"		BUSHING SILB.	ASTM-B62		—	FLAGG FIG. 5057	504703-A
	F-20	4	3/4"		STREET ELL MALE x SILB		175, 181, 90-93	—	FIG. 5108	
	F-21	1	1/2"		TEE SILB.		181, 90-93	—	FIG. 5021	
	F-22	2	3/4"	—	FLOAT TRAP SCRD. WITH THERMOSTATIC VENT	CAST IRON ASTM A126	175, 187, 90-93	—	SARCO TYPE FT-30	504710-A
	F-23	1	1 1/4"x1 1/4"x1 1/4"	200#	RED. TEE, SILB. x SILB. x SCRD	CAST BRONZE ASTM B-62	175, 181, 90-93	—	FLAGG FIG. 5023	504703-A
	F-24	1	1 1/4"x1 1/4"x1/2"		SILB.		181, 90-93	—	FIG. 5021	
	F-25	1	1 1/4"	125#	CAP, SCRD.		90-93	B16.15	FIG. 4145	SUPPLY

GENERAL NOTES

1-ALL PIPE SIZES ARE NOMINAL I.P.S.
2-ALL WELDING SHALL BE IN ACCORDANCE WITH A.B.S. & U.S.C.G. RULES.
3-ALL PIPING SHALL BE PROPERLY SUPPORTED TO ALLOW FOR EXPANSION AND TO REDUCE VIBRATION
4-BENDS IN COPPER PIPE SHALL HAVE A RADIUS OF AT LEAST THREE TIMES THE PIPE DIAMETER.
5-PIPING SHALL BE INSULATED IN ACCORDANCE WITH REF. # 6
6-ALL STEAM TRAPS SHALL BE AT LEAST 6" BELOW THE UNIT DRAINED. 24" OF BARE PIPE SHALL BE BETWEEN THE UNIT AND THE TRAP.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	3-24-77	3	1-ITEM F-12 CHANGED FROM BRAZOLET TO TEE, TO COMPLY WITH U.S.C.G. LETTER SER-3805 DATED 18 MARCH 1977	P.G.	USCG LTR. DATED 3-30-77
2	9-8-77	12 6 10 3-5 6 1	1-IN SECTION "MACHINERY CASING" STEAM SUPPLY PIPE REVISED AS SHOWN 2-IN PLAN OF BOAT DK., STEAM SUPPLY PIPE REVISED AS SHOWN 3-IN PLAN OF 38FT FLAT, ADDED CONTROL VALVE AND STRAINER TO STEAM SUPPLY TO UNIT HEATER, AND ADDED DET. "10-A" 4-IN B/M, ADDED ITEMS V-8, V-9, F-31, F-32, AND F-33 5-DELETED SUPPLY PIPE FROM PLAN OF UPPER DK. AND PLAN OF MAIN DK. 6-ADDED REF. # 10	P.G.	9/14/77 JJK
3	11-15-77 11-25-77	30 5A 1A 14AB 12 6-7	1-ADDED FITTINGS: F-34 THRU F-36 AND P-8. 2. ADDED REF. # 11 3. ADDED PLAN VIEW 2ND DK. BET. FRS 157 TO 170 (F.O. HEATING LINES) 4-SECTION MACH'Y CASING REVISED AS SHOWN 5-PLAN OF BOAT DK., PLAN OF UPPER DK. PLAN OF MAIN DK., AND PLAN OF 2ND DK. REVISED AS SHOWN	L.P.K. P.G.	12/5/77 JJK
4	1/19/78	1	1- CHANGED REF # 11 TO READ M4650-375-05-7 (WAS M4650-375-05-3)	PCO	1-24-78 ega
5	2/21/78		ADDED REF. # 12 (PIPE SK. No.)	R W B	2/23/78 ega
6	4/21/78	1-13 14	1-IN "PLAN VIEW 2ND. DK. BET. FRS. 157 TO 170" 2" STM. LINE STBD. RELOCATED TO CLEAR STAB. TK. VTS., CO2 LINES & REFRIG. DRAIN LINES. REF. No. 13 ADDED.	L. W. N.	4-25-78 ega

UAO-50233

NO.	PLAN NO.	TITLE
13	M-4650-181-23	ARRGT. STAB. TK. PIPING & A.E. IN MACH. SP.
12	M-4650-111-16	ARRGMT. OF PIPING - LOWER LEVEL - PORT. FWD. MOD # 2
11	M-4650-375-05-7	FUEL OIL TANK HEATING FRS. 157 TO 77 2ND DECK
10	M-4650-111-15	ARRGMT. OF PIPING - LOWER LEVEL - STBD. FWD. MOD. # 1
9	M-4650-111-27	ARRGMT. OF PIPING - ENG. CASING MODULE # 13
8	HONEYWELL, MINN.	A.C. PNEUMATIC CONT. SYS. DIAG.
7	-191-15-1,2,13	HVAC A/D SUN DK. & ABOVE
6	-377-1	INSUL. & LAGGING
5	-376-05-7	-LABEL PLATES
4	-376-05-2	STM. HEAT. SYS. BOAT DK. & ABOVE & L/M
3	-412-2	STD. GAGE ASSY. - GAGE PIPING & L/M
2	M-4650-412-4	LIST OF GAGES
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURN. MAT'L

REFERENCE PLANS

HULL	DESIGN	CHARGE
4651		4650
4650	27,340 DWT CONTAINER SHIP	4650

JOB NO. 376

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 12" DATE DEC. 23, 1976
DRAWN C.B./P.G. APPROVED
TRACED APPROVED
CHECKED G. McC APPROVED [illegible]

PLAN NO. M-4650-376-05-3 ALT. NO. 6

STEAM HEATING SYSTEM IN MACH. SPACE
&
AFT ARRG'T
&
L/M

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	2-9-77				
A.B.S.					
U.S.C.G.	3-15-77				
LLOYD'S R.S.					
U.S.P.H.S.					

M-745

DATE OF ISSUE	4650-51	4650-51	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.	4650-51 REPL.
ALTERATION	0	1	2	3	4	5	6
ENGINEERING DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	1-20-78	3-2-78	5-5-78
OWNERS	5	5	4	3	3	3	3
MACH. DRAFT - 22	2	2	2	2	2	2	2
TOTAL ENG'R. DIST.	15	12	11	10	10	10	10
TOTAL YARD DIST.	30	[illegible]	[illegible]	30	[illegible]	[illegible]	

MAIL: AMERICAN BUREAU, LLOYD'S R.S., U.S.M.A., U.S. NAVY, U.S.C.G., JOINER CONT'R.
INSPECTION: OWNER'S INSP., AM. BU. INSP., LLOYD'S INSP., U.S.M.A. INSP., U.S. NAVY INSP., U.S.C.G. INSP.
OFFICE: HULL DRAFT - 21, MACH. DRAFT - 22, ELEC. DRAFT - 23, OUTFIT. DRAFT - 25, ESTIMATING
MISC.: PRODUCTION (BCD), ORDER DEPT., JOINER CONT. YARD
YARD DISTRIBUTION
YARD: PIECE RATE - 11, TEST DEPARTMENT, PLANNING
STRUCTURAL: GROUND ASSEMBLY, NO. WAY, NO. WAY, NO. WAY, NO. WAY, STRUCT. SUPER., OPTICAL DETAIL - 46, WET DOCK
MACH'Y & OUTFIT.: PIPE SHOP - 52, OUTFIT. # 1 PIER, PIPE DRAFT. - 52, BOILER SHOP - 58, OUTSIDE MACH. - 60, ELECTRIC SHOP - 70, SHEET MET. SHOP - 74, COPPER SHOP - 51, PAINT SHOP - 75
OTHER: WELDING, MOLD LOFT - 41, BRACKET SHOP

4650-51 ALT. 1
4650-51 ALT. 2
4650-51 ALT. 3
4650-51 ALT. 4
ALT. 5
4650-51 ALT. 6

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-376-05-3

FRAME 1 OF 6

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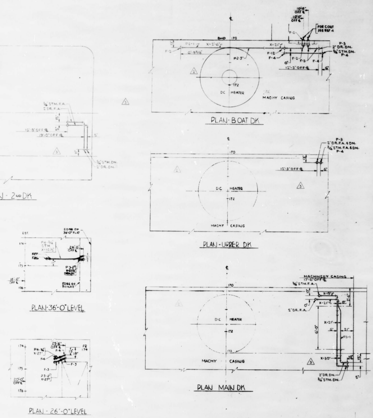
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-376-05-3

FRAME 2 OF 6



MATERIAL BILL FOR ONE (1) SHIP

REV	PC. NO.	QTY	SIZE (IPS)	SCH/ PRES	DESCRIPTION	MATERIAL & SPEC	REMARKS AND SPECIAL NOTES FROM REF. 1	ANSI	MANUFACTURER	REQ NO.
	F-26	4	2"	200#	COUPLING, SILB	CAST BRONZE ASTM B62	NOTES 181, 90-93	—	FLAGG FIG. 5060	504703-A
	F-27	12	3/4"	↓	↓	↓	↓	—	↓	↓
	F-28	8	1/2"					—		
	F-29	1	2"	REG.	PIPE NIPPLE 3" LG	BRASS ASTM B-43	THRD. ONE END	—	—	SUPPLY
	F-30	1	1 1/4"	REG.	↓ ↓ ↓	↓	↓	—	—	↓
2	F-31	1	3/4"	250#	Y-TYPE STRAINER - SILB. MONEL SCREENS W/.033 PERF	BRONZE - ASTM B-62	NOTES 181, 90-93	—	MUELLER FIG. 352 1/2	504708-B
2	F-32	1	1/4"	—	CLOSE NIPPLE	BRONZE ASTM B-62	—	—	—	Supply
2	F-33	2	3/4" x 1"	—	ADAPTER SILB X MPT.	BRONZE ASTM B-62	NOTES 181, 90-93	—	FLAGG-FIG. 5061	504703-D
						FLANGES				
	FL-1	1	3"	150#	SLIP-ON R.F. F.&D.	FORGED CARBON STEEL ASTM A-105	NOTES 90-93	B16.5	TUBE TURN PT. #50	504701
	FL-2	1	3"	150#	↓ F.F ↓	↓	↓	↓	↓	↓
	FL-4	1	3"	150#	FLANGE, SILB F.&D.	CAST BRONZE ASTM B-62	NOTES 90-93	B16.24	FLAGG FIG. 5070	504701
						BOLTS				
	B-16	4	5/8" DIA. X 3" LG.	—	HVY. HEX HD. BOLT	CARBON STEEL ASTM A-307 GR B.	5/8"-11UNC 2A USE WITH FL-1	B18.2.1 B1.1 UNC-2A		SUPPLY
	B-12	4	5/8" DIA. X 2 1/4" LG.	—	↓	↓	↓ 5/8"-11UNC 2A FL-2, FL-4	↓		↓
						NUTS				
	N-1	8	5/8"	—	HEAVY HEX SEMI-FINISHED	CARBON STEEL ASTM A307 GR. B	5/8"-11UNC 2B USE WITH B12, B16	B18.2.2 B1.1 UNC-2B		PIPE SHOP
						GASKETS				
	G-1	1	3"	150#	RING TYPE	1/8" THK COMP ASBESTOS ASTM D1170-P1161A	USE WITH FL-1	B16.21	JOHNS-MANVILLE #60	SUPPLY
	G-2	1	3"	150#	FULL FACE	↓	↓ FL-2, FL-4	↓	↓	↓
3	F-34	4	2"	-	BHD. SLEEVE	STEEL ASTM A53 TY. E OR S GR B		—	BETH. STD EF-496 FIG. #2	UAO
3	F-35	20	2"	300#	SCREWED UNION	MALLEABLE IRON ASTM A-197	NOTES 175, 90-93	—	FLAGG FIG. 1641	SUPPLY
3	F-36	8	2"	150#	90° SCREWED ELL	↓ ↓ ↓	↓	B16.3	FLAGG FIG. 1001	SUPPLY

MATERIAL BILL FOR ONE (1) SH

REV	PC. NO.	QTY	SIZE (IPS)	SCH/ PRES	DESCRIPTION	MATERIAL & SPEC	REMARKS AND SPECIAL NOTES FROM REF. 1
						PIPE & TUBING	
	P-1	10'	3"	40	PIPE	CARBON STEEL ASTM A-53 TYPE "E" OR "S" GR. B	NOTES 128 & 135
	P-2	16'	3"	.065"	SEAMLESS TUBING	COPPER ASTM B75 TYPE 122	3.500" O.D. SEE NOTE 128
	P-3	120'	2"	↓	↓	↓	2.375" ↓
	P-4	275'	3/4"				1.050"
	P-5	100'	1/2"				.840"
	P-6	1'	1/4"				.540"
	P-7	6"	1 1/4"				1.660"
3	P-8	200'	2"	.154	PIPE	CARBON STEEL ASTM A-106 GR.B	NOTES 128, 135 & 136
						VALVES	
	V-1						
	V2						
	V-3	1	3/4"	200#	GATE, SILB U.E	CAST BRONZE ASTM B-61 W/BRONZE TRIM	NOTES 1, 28, 90-93
	V-4	4	1/2"		↓ ↓		
	V-5	2	1/2"		SWG CHECK U.E. SILB		
	V-6	1	1/4"		GLOBE, SILB. U.E.		
	V-7	1	3/4"	↓	↓ ↓ U.E.	↓	↓
2	V-8	1	1"	—	STEAM CONTROL VALVE	—	FOR STEER. GEAR FLAT UNIT HEATER
2	V-9	1	1/4"	200#	GLOBE VALVE SCRD.	BRONZE - ASTM B-61	NOTES - 1, 90-93
						FITTINGS	
	F-2	2	3"	200#	90° ELL, SILB	CAST BRONZE ASTM B-62	NOTES 181, 90-93
	F-3	3	2"				
	F-4	16	3/4"				
	F-5	8	1/2"	↓	↓ ↓	↓	↓
	F-6	1	3"	—	THRD. ONE END COMPRESSION COUPLING	STEEL ASTM A513-69 TY.3	7" LONG
	F-7	1	2"	—		STEEL ASTM A53	
	F-8	4	3/4"	—			
	F-9	4	1/2"	—	↓	↓	↓
	F-10						
	F-11	1	3"	40	TEE, BW	CARBON STEEL ASTM A-234 GR WPB	NOTES 90-93
1	F-12	1	3"x3"x3/4"	200#	TEE - SILB.	CAST BRONZE - ASTM B-62	181, 90-93
	F-13	1	1 1/4" x 3/4"	200#	90° RED. ELL SCRD. x SILB	ASTM B-62	175, 181, 90-93
	F-14	1	1/2"		UNION SILB.		181, 90-93
	F-15	1	2"x1/2"x2"		RED. TEE		
	F-16	1	2"		UNION		
	F-17	1	3/4"x3/4"x1/2"		RED. TEE		
	F-18	2	1/2"		STRAINER "Y" TYPE SILB. MONEL SCREENS W/.033 PERF.	ASTM B62	
	F-19	4	3/4" x 1/2"		BUSHING SILB.	ASTM B62	
	F-20	4	3/4"		STREET ELL MPT x SILB		175, 181, 90-93
	F-21	1	1/2"	↓	TEE SILB	↓	181, 90-93
	F-22	2	3/4"	-	FLOAT TRAP SCRD. WITH THERMOSTATIC VENT	CAST IRON ASTM A126	175, 187, 90-93
	F-23	1	1 1/4"x1/4"x1 1/4"	200#	RED. TEE, SILB & SILB x SCRD	CAST BRONZE ASTM B-62	175, 181, 90-93
	F-24	1	1 1/4"x1 1/4"x1/2"	↓	↓ SILB.		181, 90-93
	F-25	1	1 1/4"	125#	CAP, SCRD.	↓	90-93

AUTOMATION INDUSTRIES INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
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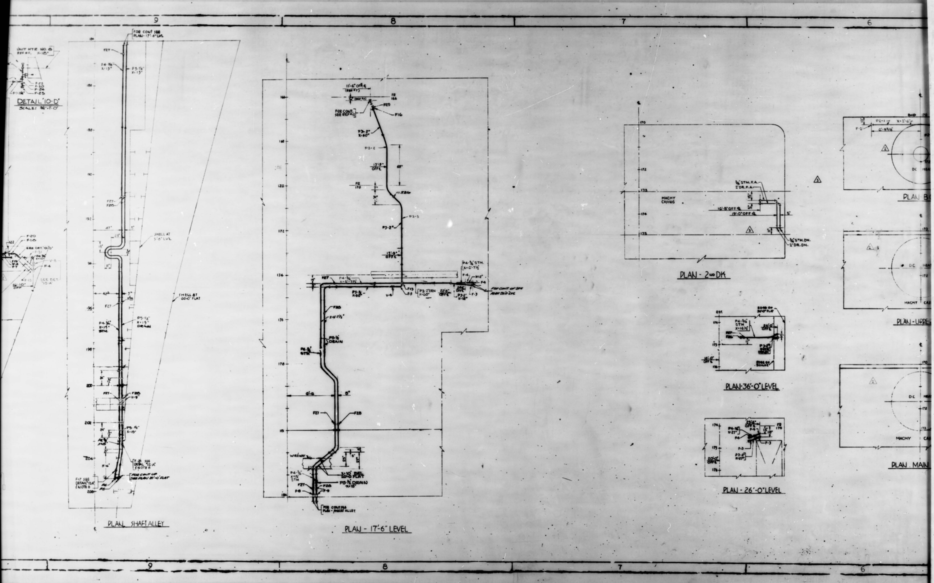
BUILDERS PLAN NO. M4650-376-05-3

FRAME 3 OF 6



9
8
7
6
DETAIL 'IO-D'
SCALE 3/8"=1'-0"
PLAN SHAFT ALLEY
PLAN - 17'-6" LEVEL
PLAN - 2ND DK
MACHY CASING
PLAN-36'-0" LEVEL
PLAN - 26'-0" LEVEL
PLAN B
PLAN - UPPE
PLAN MAIN
DC HEA
MACHY CA

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
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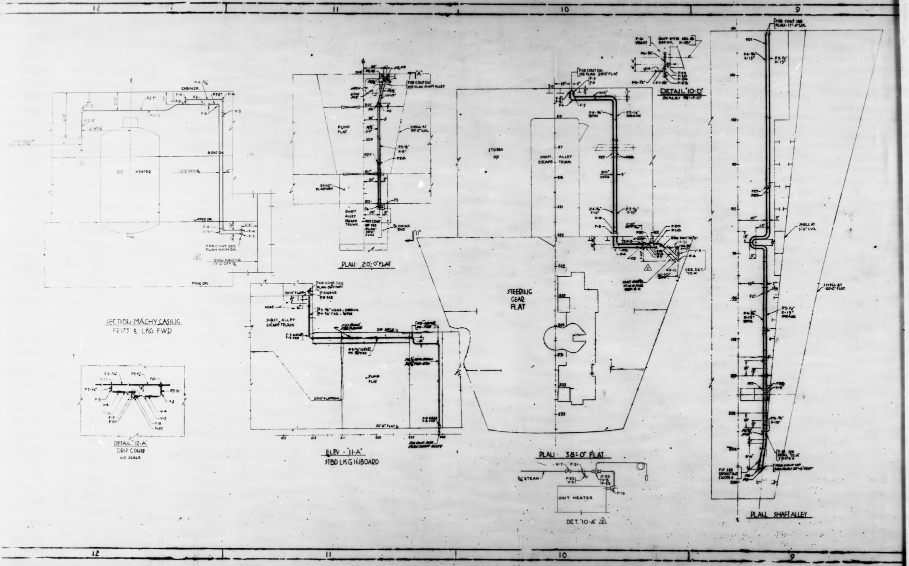
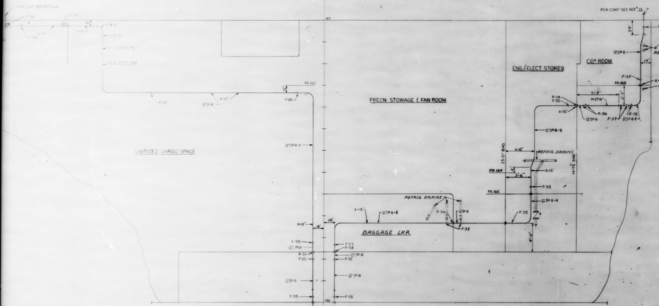
BUILDERS PLAN NO. M4650-376-05-3

NOV 1980 10X

FRAME 4 OF 6

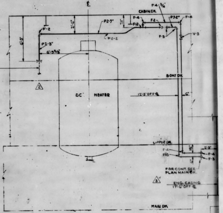

12
11
10
9
SECTION-MACHY CASING
FR.173 ℄ LKG FWD
CABIN DK
BOAT DK
UPPER DK
MAIN DK
DC HEATER
ENG. CASING
FOR CONT. SEE PLAN MAIN DK.
DETAIL "12-A"
DRIP CONN
NO SCALE
PLAN - 20'-0" FLAT
PUMP FLAT
SHELL AT 20'-0" LVL
23'-10" PLATFORM
SHAFT ALLEY ESCAPE TRUNK
SLOPING BHD
ELEV - "11-A"
STBD LKG INBOARD
SHAFT ALLEY ESCAPE TRUNK
PUMP FLAT
23'-10" PLATFORM
20'-0" FLAT
STORES
SHAFT ALLEY ESCAPE TRUNK
STEERING GEAR FLAT
PLAN - 38'-0" FLAT
DETAIL "10-D"
SCALE: 3/8"=1'-0"
UNIT HEATER
3/4" STEAM
DET. "10-A"
SHELL AT 5'-0" LVL
SHELL AT 20'-0" FLAT
PLAN - SHAFT ALLEY

15 14 13 12


FOR CONT. SEE REF.# 11
F-36
F-36
F-35
X=45°
X=12"
P-8-8
F-35
(2")P-8-7
30'-6" OFF ℄ SHIP
FR.160
12"
F-35
F-35
(2")P-8
X=12"
(2")P.8-6
UNITIZED CARGO SPACE
157
FREON STOWAGE & FAN ROOM
ENG./ELECT STORES
CO² ROOM
FOR CONT. SEE REF.# 11
24"
F-35
(2")P.8-1
4" VTS. REF. #13
17"
F-35
X=18"
VT.
FR.160
5'-9"
2'-9"
X=29½"
F-34
F-35
X=15"
(2")P.8
F-36
F-37
F-35
(2")P.8-2
(2")P.8-3
25'-0" BHD
4'-0"
REFRIG. DRAINS
FR 164
5"
3'-6"
X=15"
34'-9⅞" BHD
F-35
FR.165
(2")P.8-4
F-35
REFRIG. DRAINS
X=15"
(2")P.8-5
F-34
(2")P.8
F-35
BAGGAGE LKR.
X=12"
18"
18"
F-35
(2")P.8
F-34
F-35
F-35
F-34
(2")P.8
F-35
(2")P.8
(2")P.8
F-35
F-35
170
FOR CONT. SEE REF.# 9

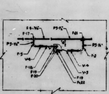
PLAN VIEW 2ND DK. BET. FRS. 157 TO 170

(F.O. HEATING LINES)


℄
P4-¾"
CABIN DK.
F-4
F-2
P3-2"
F-4
F-12
2'-1"
2'-6"
P2-3"
F-2
F-3
V-3
P2-2
6'-3"
P2-3"
6'-9⅝"
FOR CONT. SEE REF.# 9
BOAT DK.
2
DC HEATER
12'-3" OFF ℄
6"
UPPER DK.
15"
2'-3"
F-4
F-3
F-4
F-3
6"
FOR CONT. SEE PLAN MAIN DK.
3
ENG. CASING 17'-6" OFF ℄
MAIN DK.

SECTION-MACHY CASING

FR173 ℄ LKG FWD


F4-⅜"
P3-½"
F-17
F-21
P3-½"
6"
P3-½"
F-5
F-3
V-4
V-4
F-18
V-5
F-19
F-20
F-19
F-22

DETAIL "12-A"

DRIP CONN

NO SCALE

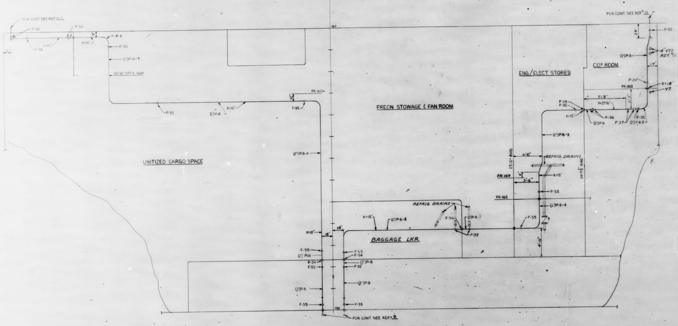
15 14 13 12

INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

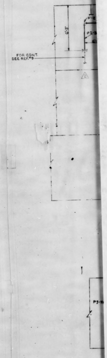
BUILDERS PLAN NO. M4650-376-05-3

FRAME 5 OF 6


FOR CONT. SEE REF.# 11
F-36
F-36
F-35
X=45"
12"
9"
X=12"
P-8-8
F-35
(2")P-8-7
30'-6" OFF ℄ SHIP
157
FR.160
12"
F-35
(2")P-8
X=12"
F-35
UNITIZED CARGO SPACE
(2")P.8-6
FREON STOWAGE & FAN ROOM
ENG./ELECT. STORES
CO² ROOM
FOR CONT. SEE REF.# 11
24"
F-35
4" VTS. REF.# 13
(2")P-8-1
17"
F-35
X=18"
FR.160
V.T.
5'-9"
2'-9"
X=29½"
F-34
F-35
X=15"
(2")P.8
F-36
F-37
(2")P.8-2
F-35
(2")P-8-3
4'-0"
REFRIG. DRAINS
25'-0" BHD.
34'-9⅞" BHD.
FR 164
5"
3'-6"
X=15"
F-35
FR.165
(2")P-8-4
F-35
4'-0"
REFRIG. DRAINS
X=15"
(2")P-8-5
F-34
(2")P.8
F-35
X=12"
18"
18"
BAGGAGE LKR.
F-35
(2") P-8
F-34
F-35
F-35
F-34
(2")P-8
F-35
(2")P-8
(2")P-8
F-35
F-35
170
FOR CONT. SEE REF.# 9

PLAN VIEW 2ND DK. BET. FRS. 157 TO 170

(F.O. HEATING LINES)


FOR CONT. SEE REF.# 9
3'-9"
P3-1

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-376-05-3

FRAME 6 OF 6

LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
1400 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Dec 1980 8X

BUILDERS PLAN NO. M4650-376-05-7

FRAME 1 OF 2

PRINT ISSUE

	YARD DISTRIBUTION	
YARD	OPM	
	PIECE RATE - 11	1
	TEST DEPARTMENT	1
	STRUC. PLANNING	
	GROUND ASSEMBLY	
STRUCTURAL	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL-45	
	WET DOCK	
MACH'Y & OUTFIT	PIPE SHOP - 52	
	OUTFIT. #1 PIER	1
	PIPE DRAFT. - 52	2
	BOILER SHOP - 58	
	OUTSIDE MACH. - 60	1
	ELECTRIC SHOP - 70	
	SHEET MET. SHOP - 74	2
	COPPER SHOP - 51	
	PAINT SHOP - 75	1
	WELDING	
OTHER	MOLD LOFT - 41	1
	BRACKET SHOP	
	TOTAL YARD DIST.	

		DATE OF ISSUE
	ALTERATION	
	ENGINEERING DISTRIBUTION	
MAIL	OWNERS	
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S NAVY	
	U.S.C.G.	
	JOINER CONT'R	
INSPECTION	OWNER'S INSP.	
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
OFFICE	HULL DRAFT. - 21	1
	MACH. DRAFT. - 22	2
	ELEC. DRAFT. - 23	1
	OUTFIT. DRAFT. - 25	
	ESTIMATING	
MISC.	PRODUCTION (BCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	12

4650-51 - ALT. 1

UAO-50283

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE DATE FEBR. 16, 1977
DRAWN G.A.McC. APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. M-4650-376-05-7 ALT. NO. 1

STEAM HEATING SYS.
LABEL PLATES

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	4-20-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

SHT. 1 OF 6

M-746

REVISIONS

REV.	ITEM	SHT Nº	DESCRIPTION	BY	CONTR DATE	CONTR APPD	OWNER DATE	OWNER APPD

REVISIONS

REV.	ITEM	SHT Nº	DESCRIPTION	BY	CONTR DATE	CONTR APPD	OWNER DATE	OWNER APPD
1		3	1- GEN. NOTES REVISED SUCH THAT OF THE ORIGINAL EIGHT (8) NOTES: THREE NOTES (NOS. 3,4, & 6) ARE NOW NOS. 8, 9, & 10 RESPECTIVELY. THREE NOTES (NOS. 5, 7, & 8) ARE DELETED. ONE NOTE. (NO. 2) IS THE SAME. ONE NOTE (NO. 1) MATL. OF PLATES REVISED. NEW NOTES NOS. 3, 4, 5, 6, & 7 ARE ADDED. (ABOVE TO COMPLY WITH SHIPS SPEC.)					
		5 6	2- ITEM #12 CHANGED FROM V-9 TO V-2. 3-SUBSCRIPT "2" REMOVED FROM VALVE FTG. NOS. ON ITEMS 29, 30, 31, 33, 34, & 35. REVISED PER LETTER FROM G.G.S., INC., DATED APR. 20, 1977 5587/536.					

DWG. Nº M-4650-376-05-7
LABEL PLATES
STEAM HEATING SYS.
SHT Nº 2 OF 6

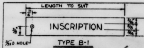
GENERAL NOTES: ⚠1

1. LABEL PLATES SHALL BE BRASS OR OTHER SUITABLE MATERIAL. METAL PHOTOTYPE PLATES MAY NOT BE USED.
2. THEY SHALL HAVE SMOOTH EDGES & ROUNDED CORNERS.
3. MARKINGS INDICATING SERVICE SHALL BE ETCHED OR ENGRAVED.
4. ETCHED PLATES SHALL NOT BE LESS THAN 0.003 INCHES IN DEPTH.
5. ENGRAVED PLATES SHALL NOT BE LESS THAN 0.05 INCHES THICK WITH MARKINGS ENGRAVED TO A DEPTH OF NOT LESS THAN 0.02 INCH.
6. ETCHED & ENGRAVED NAME PLATES SHALL BE WELL FILLED WITH A HARD PAINT OR ENAMEL OF A CONTRASTING COLOR.
7. MARKING ON VALVE NAME PLATE SHALL BE AT LEAST 3/8" HIGH.
8. LABEL PLATES SHALL BE SECURELY FASTENED TO OR ADJACENT TO VALVE OR FITTING & CLEARLY VISIBLE TO THE OPERATOR.
9. IF THE PLATE DOESN'T FIT THE SPECIFIED LOCATION IT SHALL BE ALTERED TO SUIT CONDITIONS ABOARD SHIP.
10. WIRE, USED FOR SECURING LABEL PLATES, SHALL BE STEEL WIRE GAGE #16, CRES COMP. 304 ANNEALED.

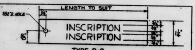
LIST OF REFERENCES

NO.	TITLE	DWG. NO.
1	STEAM HTG. SYS. - BOAT DK. & BELOW AFT FR. 157 - ARRGT. & L/M INSIDE MACHY. SPACE	M-4650-376-05-3
2	STEAM HTG. SYS. - BOAT DK. & ABOVE - ARRGT & L/M OUTSIDE MACHY. SPACE	M-4650-376-05-2

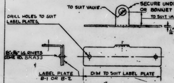
DWG. Nº M-4650-376-05-7
LABEL PLATES
STEAM HEATING SYS.
SHT Nº 3 OF 6



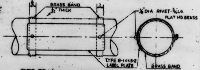
TYPE B-1
ONE LINE INSCRIPTION
TO BE SECURELY WIRED TO VALVE OR ADJACENT PIPING - SEE GEN. NOTE # 10 ⚠1



TYPE B-2
TWO LINES INSCRIPTION
TO BE SECURELY WIRED TO VALVE OR ADJACENT PIPING - SEE GEN. NOTE # 10 ⚠1


TO SUIT VALVE.
SECURE UNDER VALVE FLG. OR BONNET NUT
TO SUIT VALVE
1/16"
DRILL HOLES TO SUIT LABEL PLATES.
1/8"x5/16" LG. RIVETS DOME HD. BRASS
LABEL PLATE B-1 OR B-2
DIM TO SUIT LABEL PLATE

TYPE BF-1 (ONE LINE INSCRIPTION)
TYPE BF-2 (TWO LINE INSCRIPTION)
LABEL PLATE SAME AS TYPE "B-1" OR "B-2" EXCEPT WITH A HOLE IN EACH END ATTACH TO BACKING PLATE AS SHOWN


BRASS BAND 1/32" THICK
1/8" DIA RIVET - 5/16 LG. FLAT HD BRASS
TYPE B-1 OR B-2 LABEL PLATE
BRASS BAND

TYPE BP-1 (ONE LINE INSCRIPTION)
TYPE BP-2 (TWO LINE INSCRIPTION)
LABEL PLATE SAME AS TYPE "B-1" OR "B-2" EXCEPT CURVED TO SUIT PIPE OR INSULATION AND A HOLE IN EACH END, ATTACH TO PIPE OR INSULATION AS SHOWN

DWG. Nº M-4650-376-05-7
LABEL PLATES
STEAM HEATING SYS.
SHT Nº 4 OF 6

ITEM NO.	QTY ONE SHIP	VALVE OR FTG. NO.	ARRGT DWG. NO.	LABEL PLATE		LOCATION				REMARKS	SYS.	REV. NO.
				TYPE	INSCRIPTION	DECK	FR. NO.	P/S	COMPT.			
1	1	V1	M-4650-376-05-2	B1	VENT	SUN DK	172	P	FAN RM.	WIRE TO VALVE FOR RHTR #11	STM. HTG. SYS.	
2	1	V2		B1	BLOW-OFF							
3	1	V3		B1	COND. DR. C.O.							
4	1	V5		B1	STM. HTG. SUP. C.O.							
5	1	V7		B1	TEMP. REG. VALVE							
6	1	V1		B1	VENT		174			FOR PHTR #6		
7	1	V2		B1	BLOW-OFF							
8	1	V3		B1	COND. DR. C.O.							
9	1	V5		B1	STM. HTG. SUP. C.O.							
10	1	V7		B1	TEMP. REG. VALVE							
11	1	V1		B1	VENT		170-171	S		FOR PHTR #7		
12	1	V2		B1	BLOW-OFF							
13	1	V4		B1	COND. DR. C.O.							
14	1	V6		B1	STM. HTG. SUP. C.O.							
15	1	V8		B1	TEMP. REG. VALVE							
16	1	V1		B1	VENT		172			FOR RHTR #10		
17	1	V2		B1	BLOW-OFF							
18	1	V3		B1	COND. DR. C.O.							
19	1	V5		B1	STM. HTG. SUP. C.O.							
20	1	V7		B1	TEMP. REG. VALVE							
21	1	V1		B1	VENT		174			FOR PHTR #5		

DWG. Nº M-4650-376-05-7

LABEL PLATES

STEAM HEATING SYSTEM

SHEET NO. 5 of 6

ITEM NO.	QTY ONE SHIP	VALVE OR FTG. NO.	ARRGT DWG. NO.	LABEL PLATE		LOCATION				REMARKS	SYS.	REV. NO.
				TYPE	INSCRIPTION	DECK	FR. NO.	P/S	COMPT.			
22	1	V2	M-4650-376-05-2	B1	BLOW-OFF	SUN DK	174 ,,	S	FAN RM.	WIRE TO VALVE FOR PHTR #5	STM. HTG. SYS.	
23	1	V3		B1	COND. DR. C.O.							
24	1	V5		B1	STM. HTG. SUP. C.O.							
25	1	V7		B1	TEMP. REG. VALVE							
26	1	V1		B1	STM. GAUGE ROOT VALVE		170	P				
27												
28										WIRE TO VALVE	STM HTG SYS	
29	1	V3	M-4650-376-05-3	B2	STM. HTG. SUP. TO UNIT HTR. IN' STEERING GEAR RM. C.O.	BOAT DK.	171	S	MACH'Y. CASING.			
30	1	V4		B1	COND. DR. C.O.	17'-6" LVL.	174		MACHY SPACE			
31	2	V4		B1	COND. DRIP CONN. C.O.	SHAFT ALLEY	203-205					
32												
33	1	V4	M-4650-376-05-3	B1	COND. DR. C.O.	38'-0" FLAT	224	S	STEERING GEAR FLAT	WIRE TO VALVE FOR UNIT HTR # 8	STM. HTG. SYS.	
34	1	V6		B1	VENT							
35	1	V7		B1	HTR. STM. SUP. C.O.							

DWG. Nº M-4650-376-05-7

LABEL PLATES

STEAM HEATING SYSTEM

SHEET NO. 6 of 6

GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

Dec 1980

BUILDERS PLAN NO. M4650-376-05-7

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-377-1

FRAME 1 OF 5

---

3 | 2

LATING MATERIALS (CONTINUED)

HIGH TEMPERATURE (500°F TO 999°F)

CALCIUM SILICATE	- FED. SPEC. HH-I-523

ON OF INSULATION

PRIOR TO APPLICATION OF LAGGING, INSULATION LOCATED IN POSITIONS EXPOSED TO THE WEATHER OR UNDUE MOISTURE SHALL BE PROTECTED
4 INCH WEATHER-RESISTANT INSULATION, REINFORCED WITH HARDWARE CLOTH AND SECURED WITH NO. 16 B & S COPPER WIRE. PARTICULAR CARE
TAKEN TO AVOID CRACKS OR OPENINGS IN THE CONTINUITY OF THE COMPLETED INSULATION AND LAGGING, ESPECIALLY IN THE VICINITY OF
FLANGES OR FITTINGS, IN ORDER TO PREVENT ENTRANCE OF WATER.

IN LOCATIONS WHERE THE COMPLETED INSULATION AND LAGGING IS LIABLE TO ABUSE, (OTHER THAN TURBINES) PROTECTIVE GALVANIZED SHEET
GGING OF NO. 20 USSG SHALL BE INSTALLED. THIS DOES NOT REQUIRE LAGGING OF TURBINE CASINGS. ALL INSULATION AND LAGGING
DE OF HATCHES SUBJECT TO MECHANICAL INJURY SHALL BE PROTECTED BY 1/4 INCH CHECKERED PLATES AND HEAVY ANGLES. INSULATION WHICH
T TO CRUSHING BY SUPPORTING HANGERS ON ITS OUTSIDE SHALL HAVE ADEQUATE PROTECTION AGAINST CRUSHING.

GING MATERIALS

LAGGING MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE FOLLOWING SPECIFICATIONS:

FIBROUS GLASS CLOTH, TAPE AND THREAD	- MIL. SPEC. MIL-C-20079
BRATTICE CLOTH FOR -20 TO 500°F SERVICE	- MIL. SPEC. MIL-C-788
ADHESIVE LAGGING CEMENTS	- MIL. SPEC. MIL-A-3316
"MAC-TAC" ALUMINUM SEALING TAPE	- [illegible]

[illegible]

ESIVES, COATING AND SEALING COMPOUNDS

ADHESIVES	MIL-A-3316 MIL-A-15199*
BEDDING COMPOUND	MIL-B-19564
COATING COMPOUND	MIL-C-19565
END SEALING COMPOUND	MIL-C-22395
FINISHING AND/OR INSULATION CEMENTS	SS-C-160

* NOT APPLICABLE FOR ADHERING FIBROUS GLASS INSULATION AND/OR LAGGING.

LICATION OF INSULATION AND LAGGING

IN GENERAL, ALL PIPING SHALL BE TESTED BEFORE APPLICATION OF INSULATION AND LAGGING.

SAMPLES OF THE VARIOUS TYPES OF INSULATION PROPOSED FOR THE ABOVE SPECIFIED USES SHALL BE SUBMITTED.

LICATION OF ANTISWEAT INSULATION AND LAGGING

WHERE PIPING PASSES THROUGH HUMID SPACES SUCH AS THE GALLEY, MOLDED FIBROUS GLASS INSULATION LAGGED WITH REWETTABLE FIBROUS GLASS CLOTH SHALL BE USED.

IN AREAS OF THE MACH. SPACE WHERE DRIPPING MAY CAUSE DAMAGE OR DISCOMFORT TO PERSONNEL, FLEXIBLE ELASTOMERIC FOAMED PLASTIC SHALL BE USED. LAGGING OF FOAMED PLASTIC IS NOT REQUIRED.

INSULATION AND LAGGING FOR PIPING AND MACHINERY

1. GENERAL

INSULATION AND LAGGING MATERIALS, WORKMANSHIP AND METHODS OF INSTALLATION THEREOF FOR MACHINERY, ASSOCIATED EQUIPMENT AND PIPING SYSTEMS AND DUCT WORK SHALL BE AS INDICATED HEREIN. HULL AND OTHER INSULATION, SEE OTHER PLANS. IN GENERAL, ALL PIPING SHALL BE TESTED BEFORE APPLICATION OF INSULATION AND LAGGING.

THE INTERNAL TEMPERATURE OF THE PIPE OR UNIT OF EQUIPMENT SHALL BE THE CRITERION FOR DETERMINING THE TYPE OF MATERIAL AND THICKNESS OF THE INSULATION TO BE USED. EQUIPMENT AND PIPING DESIGNED TO DESSEMINATE HEAT ARE EXCLUDED FROM THESE REQUIREMENTS.

THE THICKNESS OF INSULATION AS SPECIFIED MAY BE MODIFIED SUBJECT TO APPROVAL, BUT IN NO CASE SHALL THE THICKNESS BE REDUCED SUCH THAT THE SURFACE TEMPERATURE OF THE INSULATION EXCEEDS 125°F BASED ON AN AMBIENT OF 100°F EXCEPT IN AREAS OF THE ENGINE ROOM CASING WHERE THE INSULATION SHALL BE BASED ON MAINTAINING A TEMPERATURE DIFFERENCE BETWEEN AMBIENT AND SURFACE OF 25°F.

ALL INSULATING MATERIALS SHALL BE PROPERLY SECURED TO PREVENT SETTLING AND TO PERMIT THEIR READY REMOVAL, AS MAY BE NECESSARY FOR MAINTENANCE OF EQUIPMENT.

DIESEL ENGINE EXHAUST PIPING WHICH IS EXPOSED TO THE WEATHER SHALL NOT BE INSULATED OR LAGGED, BUT SHALL BE PROPERLY SHOT BLASTED OUTSIDE PRIOR TO APPLYING METCO PROCESS WHICH CONSISTS OF FLAME SPRAYING SIX(6) MILS OF METALLIC ALUMINUM FOLLOWED BY AN APPLICATION OF TWO(2) COATS OF METCOSEAL SA SILICONE ALUMINUM. THE INTERIOR OF PIPING SHALL BE COATED WITH ALUMINUM PAINT. WHERE THE PIPING IS NOT INSULATED PORTABLE EXPANDED OR SHEET METAL GUARDS SHALL BE FITTED TO PREVENT INJURY TO PERSONNEL. DIESEL EXHAUST PIPING AND DIESEL SURFACES NOT EXPOSED TO THE WEATHER SHALL BE INSULATED AND LAGGED AS HEREIN SPECIFIED IN ACCORDANCE WITH INTERNAL TEMP. REQMTS.

PIPE HANGERS FOR PIPING WHICH HAS INTERNAL TEMPERATURES OF 300°F AND OVER OR 50°F AND BELOW SHALL BE INSULATED FROM THE STEEL STRUCTURE TO WHICH THEY ARE ATTACHED.

PIPING EXPOSED TO THE WEATHER SHALL BE EFFECTIVELY INSULATED AGAINST FREEZING. THIS REQUIREMENT, HOWEVER, APPLIES ONLY TO SYSTEMS WHERE A FLUID IS NORMALLY FLOWING, AND DOES NOT APPLY TO SYSTEMS WHERE THE EXPOSED PORTION MAY BE SECURED AND DRAINED.

ALL STEAM AND DRAIN PIPES, REGARDLESS OF LOCATION, SHALL BE INSULATED IN ALL CASES WHERE THE TEMPERATURE IS SUFFICIENT TO CAUSE BODILY INJURY IF THE PIPING IS ACCIDENTLY TOUCHED. ALL STEAM AND STEAM DRAIN PIPING IN QUARTERS AND LIVING SPACES SHALL BE INSULATED THROUGHOUT, INCLUDING VALVES, FITTINGS, ETC. VALVE STEMS AND HANDWHEELS SHALL NOT BE INSULATED.

CONCEALED OR EXPOSED PIPING OUTSIDE THE MACHINERY SPACE, HAVING INTERNAL TEMPERATURES OVER 125°F OR LESS THAN 55°F, SHALL HAVE CONTINUOUS INSULATION IN WAY OF ALL PENETRATIONS AND SUPPORTS, EXCEPT THAT INSULATED STUFFING BOXES SHALL BE USED IN WAY OF WATERTIGHT STRUCTURE.

INSULATING AND LAGGING MATERIAL, PROCEDURES AND WORKMANSHIP, AS SPECIFIED HEREIN OR AS AN APPROVED SUBSTITUTION, SHALL MEET ALL TESTS AND REQUIREMENTS OF U.S.C.G. REGULATIONS.

ALL ITEMS SHALL BE AS LISTED ON U.S.C.G. EQUIPMENT LISTS FOR ITEMS APPROVED OR ACCEPTED UNDER MARINE INSPECTION AND NAVIGATION LAWS.

FOR PAINTING OF SURFACES BEFORE APPLICATION OF INSULATION AND FOR PAINTING AND IDENTIFICATION OF SURFACES AFTER APPLICATION OF LAGGING SEE REF NO. 1.

2. INSULATING MATERIALS

THE FOLLOWING INSULATING MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE SPECIFICATIONS LISTED AND BE USED IN THE MANNER HEREINAFTER DESCRIBED FOR THE VARIOUS SYSTEMS:

LOW TEMPERATURE -30°F TO 125°F

CELLULAR GLASS	- FED. SPEC. HH-I-551, TYPES I & II
POLYURETHANE RIGID FOAM	- M. A. SPEC. 32-MA-8
EXPANDED POLYSTRENE	- MIL. SPEC. MIL-P-40619
ANTISWEAT FLEXIBLE UNICELLULAR FOAM PLASTIC	- MIL. SPEC. MIL-P-15280, TYPE II - HH-I-573
FIBROUS GLASS BLANKET	- M.A. SPEC. 32-MA-3
FIBROUS GLASS	- HH-I-558

MEDIUM TEMPERATURE 126°F TO 499°F

CALICUM SILICATE	- FED. SPEC. HH-I-523
FIBROUS GLASS	- FED. SPEC. HH-I-558
FIBROUS GLASS BLANKET	- M. A. SPEC. 32-MA-1 (WITHOUT VIBRATION REQUIREMENTS)

REQN. 22-500055

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	6-7-78	4	1. IN ARTICLE NO. 2 DELETED FIBROUS GLASS AND FIBROUS GLASS FELT FROM HIGH TEMPERATURE INSULATING MATERIALS.		G.G. SHARP, INC. LETTER DATED 7-12-78
		4	2. IN ARTICLE NO. 3 "LAGGING MATERIALS" ADDED MACHY. TO NOTE FOR LAGGING WITH REWETTABE GLASS CLOTH AND DELETED FITTINGS FROM ITEMS NOT TO BE LAGGED WITH GLASS CLOTH.		
		4,5	3. IN ARTICLE NO. 5A REVISED APPLICATION OF ANTI-SWEAT INSULATION & LAGGING IN IT'S ENTIRETY.		
		6	4. IN ARTICLE NO. 5A APPLICATION OF LAGGING FOR LOW TEMPERATURE INSULATION DELETED THE WORD ASBESTOS.		
		9	5. REVISED SPECIAL NOTE NO. 2 IN ARTICLE NO. 5C.		
		9	6. IN ARTICLE NO. 7 REVISED NOTE FOR MACHY. LAGGING IN IT'S ENTIRETY.		
		10	7. IN LIST OF MACHY. IN ARTICLE NO. 7 DELETED THE FOLLOWING: MK. NO. 39, 101 & 110 AND ADDED MK. NO. 79, 68, BOILER DOWN COMERS, ASTERN STEAM PIPING, CARGO REFR. OIL REC., CARGO REFR. MIXING EDUCTOR, CARGO REFR. DEHYDRATOR, CARGO REFR. LIQ. & GAS SEPARATOR, AND CARGO REFR. PUMP OUT RECEIVER.		
		11	8. REVISED TABLE C IN IT'S ENTIRETY TO AGREE WITH LATEST MANUFACTURER'S THICKNESS.		
		1	9. REVISED TITLE OF THIS DRWG. IN IT'S ENTIRETY.	G.L.W.	
2	8-17-78	10	1. IN ARTICLE NO. 7, LIST OF MACHY, REVISED TEMP. FROM 485° TO 712° FOR AIR PREHEATER (MK. 50)		G.G. SHARP LTR. DATED 9-21-78
		11	2. IN ARTICLE NO. 8 REVISED PIPE SIZE FROM 1½" TO 6" AND 1½" OD" IN TABLE C (DES. DEV.)	G.L.W.	
3	-8	4	1. IN ARTICLE NO. 3 ADDED "MAC-TAC" ALUMINUM SEALING TAPE		G.G. SHARP LTR. DATED 1-29-79
		8 9	2. IN ARTICLE NO. 7 REVISED TYPE OF INSULATION FOR BOILER SMOKESTACKS ON HULL 4651		
		12	3. ADDED DETAIL "12-15" FOR POLYURETHANE EXPANSION & CONTRACTION.	G.L.W.	

D

C

HULL	DESIGN	CHARGE
4651	27,340 DWT CONTAINERSHIP	10-8450
4650		10-8450

JOB NO. 377

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE DEC. 22, 1977
DRAWN S/B G.L. WOLFORD
APPROVED
TRACED
APPROVED
CHECKED J.W. [illegible]
APPROVED

PLAN NO. M-4650-377-1
ALT. NO. 3

SCHEDULE OF INSULATION AND LAGGING FOR PIPING, MACHINERY AND VENTILATION

APPROVAL LETTERS

HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-27-78				
A.B.S.	☒				
U.S.C.G.	☒				
LLOYD'S R.S.	☒				
U.S.P.H.S.	☒				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
2	M-4650-111-2	MACHINERY ARRANGEMENT
1	H-4650-161-00-01	PAINT SCHEDULE

B

A

1

M-747

4650-51
4650-51
4650-51 REPL.
4650-51 REPL.
4650-51 REPL.

	DATE OF ISSUE				
ALTERATION	0	0	1	2	3
ENGINEERING DISTRIBUTION	1-9-78	2-10-78	6-13-78	8-25-78	12-22-78
MAIL: OWNERS	6		6	6	6
AMERICAN BUREAU					
LLOYD'S R.S.					
U.S.M.A.					
U.S. NAVY					
U.S.C.G.					
JOINER CONT'R.					
VENDOR				4	4
INSPECTION: OWNER'S INSP.		1	1		1
AM. BU. INSP.					
LLOYD'S INSP.					
U.S.M.A. INSP.		1	1		1
U.S. NAVY INSP.					
U.S.C.G. INSP.					
OFFICE: HULL DRAFT.-21	1	1	1		1
MACH. DRAFT.-22	2	2	2		2
ELEC. DRAFT.-23	1	1	1		1
OUTFIT. DRAFT.-25					
ESTIMATING					
[illegible]	1	1	1		1
MISC.: PRODUCTION (BCO)					
ORDER DEPT.					
JOINER CONT. YARD					
[illegible] PLANNING	2				
TOTAL ENG'R. DIST.	13	7	13	10	17
YARD DISTRIBUTION	[illegible]	[illegible]	[illegible]		
YARD: [illegible]	1	1	1		
Q. ASSURANCE	1	1	1		
PIECE RATE-11	1	1	1		
TEST DEPARTMENT					
J. SIMMONS	1	1	1		
STEEL PLANNING	1	1	1		
STRUCTURAL: GROUND ASSEMBLY	2	2	2		
[illegible]	3	2	2		
P. [illegible]	1	1	1		
[illegible]	1	1	1		
NO. WAY					
NO. WAY					
NO. WAY					
NO. WAY					
STRUCT. SUPER.	2	2	2		
OPTICAL DETAIL-40	2	2	2		
WET DOCK					
MACH'Y & OUTFIT.: PIPE SHOP-52	6	6	6		
OUTFIT. #P1 PIER	1	1	1		
PIPE DRAFT.-32	2	2	2		
BOILER SHOP-58	1	1	1		
OUTSIDE MACH.-60	1	1	1		
QUALITY CONTROL	1	1	1		
ELECTRIC SHOP-70					
SHEET MET. SHOP-74	1	-			
COPPER SHOP-51					
PAINT SHOP-75	1	1	1		
OTHER: WELDING					
G. MATERIAL	1	1	1		
MOLD LOFT-41	1	1	1		
BRACKET SHOP					
TOTAL YARD DIST.	31	33	31		

4650-51-ALT. 0
4650-51-ALT. 1&2
4650-51-ALT. 3

35.0 SQ. FT.

M-4650-377-1 INSULATION SCHEDULE

5. (a) LOW TEMPERATURE (-30°F TO 125°F)(CONTINUED)

APPLICATION OF LAGGING

AFTER INSTALLATION OF THE INSULATION AND WHILE THE VAPOR SEALER APPLIED ABOVE IS STILL QUITE SOFT, IT SHALL BE COVERED WITH FIBROUS GLASS CLOTH OR TAPE, OR THE CLOTH MAY BE APPLIED AFTER DRYING OF THE VAPOR SEALER AND SECURED BY SEWING OR AN ADHESIVE TAPE, WHERE USED, SHALL BE WOUND SPIRALLY WITH NOT LESS THAN A 3/8 INCH OVERLAP. THE ENDS OF EACH ROLL SHALL BE STAPLED OR CEMENTED TO THE INSULATION. ALTERNATE MATERIALS MAY BE SUBSTITUTED SUBJECT TO APPROVAL.

ALUMINUM JACKETED INSULATION (JOHNS-MANVILLE META-LOK OR EQUAL) SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

PIPING REQUIRING LOW TEMPERATURE INSULATION & LAGGING			
SERVICE	DIAGRAM NO.	TEMP. RANGE ° F	REMARKS
ICE WATER SYSTEM	4650-111-20-40	36 - 49	
FREON SUCT. - MANIFOLD TO EVAP.	——	1 - 35	A.C. SYSTEM
FREON - EXPANSION VLV. TO EVAP.			
FREON SUCT. - COMPRESSOR TO EVAP.	——	- 20	SHIPS SERVICE
FREON - EXPANSION VLV. TO EVAP.			
FREON SUCT. - COMPRESSOR TO EVAP.	4650-111-20-56	-20	CARGO
FREON - EXPANSION VLV. TO EVAP.			

5. (b) MEDIUM TEMPERATURE (126°F TO 499°F)

THICKNESS

ALL PIPING HAVING A NORMAL DESIGN INTERNAL TEMPERATURE BETWEEN 126°F AND 499°F SHALL BE INSULATED WITH MEDIUM TEMPERATURE INSULATION, IN ACCORDANCE WITH TABLE D IN ARTICLE 8.

SINGLE LAYER MOLDED INSULATION MAY BE USED WHERE THERMAL CONDUCTIVITY AND SURFACE TEMPERATURE REQUIREMENTS ARE MET AND PROVISION FOR THERMAL EXPANSION IS INCLUDED.

PRELAGGED METAL OR FIBROUS GLASS INSULATION SHALL BE USED AND THE THICKNESS SHALL BE AS APPROVED.

LAGGING MATERIALS SHALL BE IN ACCORDANCE WITH ARTICLE 3.

APPLICATION OF INSULATION

SINGLE LAYER INSULATION ON STRAIGHT PIPE SHALL BE SECURED AT 3 POINTS FOR EACH 3 FOOT LENGTH WITH NO. 18 BWG ANNEALED IRON WIRE OR BY METAL BANDS. AFTER SECURING THE WIRE OR BANDS, THE PROTRUDING ENDS SHALL BE BENT FLAT, LEAVING NO PROJECTIONS.

WHERE PIPE INSULATION WITH A TOTAL THICKNESS OF OVER 3 INCHES SHALL BE APPLIED IN TWO LAYERS, ALL JOINTS SHALL BE BROKEN. THE FIRST LAYER WITH ALL JOINTS TIGHTLY BUTTED SHALL BE SECURELY WIRED TO THE PIPE WITH NO. 18 BWG ANNEALED IRON WIRE, USING NOT LESS THAN 3 LOOPS PER SECTIONAL LENGTH OR ONE LOOP PER FOOT LENGTH ON PIPES UP TO AND INCLUDING 6 INCH DIAMETER AND NOT LESS THAN 4 LOOPS PER SECTIONAL LENGTH ON LARGER PIPES. THE SECOND LAYER SHALL BE APPLIED OVER THE FIRST LAYER SO THAT BOTH CIRCUMFERENTIAL AND HORIZONTAL JOINTS ARE STAGGERED, AND SHALL BE HELD IN PLACE ON PIPES UP TO AND INCLUDING 6 INCHES WITH NOT LESS THAN 3 LOOPS OF NO. 18 BWG ANNEALED IRON WIRE AND 4 LOOPS ON LARGER PIPES. THE ENDS OF THE WIRE SHALL BE TIGHTLY TWISTED, BENT OVER, AND HAMMERED INTO THE INSULATION SO AS TO LEAVE NO PROJECTIONS. METAL BANDS, PROPERLY SECURED MAY BE USED IN LIEU OF WIRE. MODIFICATIONS TO THE ABOVE WILL BE PERMITTED AS APPROVED.

ON BENT PIPE, WHERE THE RADIUS OF THE BEND PERMITS, SEGMENTS OF MOLDED INSULATION SHALL BE USED ANDUNAVOIDABLE OPENINGS CLOSED WITH INSULATING CEMENT. WHERE THIS PROCEDURE IS NOT FEASIBLE, BUILT-UP INSULATION MADE OF LAYERS OF INSULATING CEMENT MAY BE USED. IN THIS CASE, THE INSULATION SHALL BE COVERED WITH A JACKET OF HARD SURFACE INSULATING CEMENT, REINFORCED WITH HARDWARE CLOTH WHERE THE OUTSIDE DIAMETER OVER THE INSULATION IS 12 INCHES OR GREATER.

APPLICATION OF LAGGING

WHERE PIPING IS NOT EXPOSED TO WEATHER, THE INSULATION SHALL BE COVERED WITH TAPE OR CLOTH IN ACCORDANCE WITH ARTICLE 3, APPLIED WITH ADHESIVE LAGGING CEMENT, MIL. SPEC. MIL-A-3316, TYPE II.

WHERE PIPING IS EXPOSED TO WEATHER IT SHALL BE PROTECTED BEFORE LAGGING AS DESCRIBED IN ARTICLE 2.

△3 5. APPLICATION OF INSULATION AND LAGGING (CONTINUED)

APPLICATION OF ANTISWEAT INSULATION AND LAGGING (CONTINUED)

IN CONTROLLED ENVIRONMENT AREAS SUCH AS SERVICE SPACES THE PIPING MAY BE COATED WITH 3/16" THK. MIXTURE OF VERMICULITE AND SEALFAS COATING 30-36 OR EQUAL COMPLYING WITH MIL SPEC. MIL-A-3316 B CLASS I.

SURFACES WITH TEMPERATURES OF 56°F TO 125°F, INCLUDING ALL COLD WATER PIPING AND EQUIPMENT, SUCH AS FIRE, SANITARY AND FRESH WATER SYSTEMS, AND SOIL PIPES, SHALL BE INSULATED AND LAGGED EXCEPT FOR VARIOUS PIPING SYSTEMS LOCATED IN THE ENGINE ROOM BILGES, ETC.

PIPING REQUIRING ANTI-SWEAT INSULATION AND LAGGING			
SERVICE	DIAGRAM NO.	56° TO 125° F TEMP. RANGE	REMARKS
FIREMAIN	4650-111-20-50	ANTI-SWEAT	
COLD F.W. SYSTEM	4650-111-20-40		
* MN. & AUX. CIRC. SYSTEM	4650-111-20-45		
* S.W. SERVICE IN ENGINE RM	4650-111-20-46 & 47		
PLUMBING & DK. DRS.	4650-111-20-42		
REFRIG. SPACES DRS.	——		
WEATHER DECK DRS.	——		

* INSULATION REQUIRED ONLY WHERE DRIPPING MAY CAUSE DAMAGE OR DISCOMFIT.

5. (a) LOW TEMPERATURE (-30°F TO 125°F)

THICKNESS

LOW TEMPERATURE SURFACES (-30 TO 55°F) SHALL BE INSULATED TO THE MINIMUM THICKNESS LISTED IN TABLES A, A-1, B, B-1, C AND C-1, IN ARTICLE 8.

THE FOLLOWING LOW TEMPERATURE (-30 TO 55°F) SYSTEMS SHALL BE INSULATED AND LAGGED IN THE MANNER HEREINAFTER SPECIFIED.

ALL REFRIGERANT SUPPLY PIPING BETWEEN EXPANSION VALVE AND EVAPORATOR COIL. REFRIGERANT SUPPLY PIPING AHEAD OF EXPANSION VALVE NEED NOT BE INSULATED WHERE AMBIENT TEMPERATURE IS LESS THAN 120°F, EXCEPT WHERE DRIPPING MAY CAUSE DAMAGE OR DISCOMFORT. PIPING LEADING TO AND FROM REFRIGERATED SPACES SHALL BE SUITABLY INSULATED FOR A REASONABLE DISTANCE FROM THE SPACES TO PREVENT HEAT TRANSFER. ALL REFRIGERANT RETURN PIPING BETWEEN THE EVAPORATOR COIL AND COMPRESSOR.

APPLICATION OF INSULATION

STRAIGHT PIPES SHALL BE INSULATED WITH MOLDED FORMS. BORE, BUTT END AND LONGITUDINAL JOINT SURFACES SHALL BE COATED WITH VAPOR SEALING COATING. THE OUTER INSULATION SURFACE SHALL NOT BE COATED. ONLY SUFFICIENT COATING TO FILL ALL SURFACE CELLS SHALL BE USED. COATING SHALL BE NOT MORE THAN 1/16 INCH THICK. INSULATION SHALL BE INSTALLED WITH STAGGERED END JOINTS, ONE HALF SECTION EXTENDING BEYOND THE OPPOSITE END JOINT. LONGITUDINAL JOINTS ON HORIZONTAL PIPING SHALL BE ON TOP AND BOTTOM OF THE PIPE. INSULATION SHALL BE SECURED TIGHTLY TO PIPE WITH A 1/2 INCH WIDE NO. 22 USSG GALVANIZED STEEL BANDS SPACED ON 9 INCH CENTERS STARTING APPROXIMATELY 4-1/2 INCHES FROM INSULATION BUTT JOINTS.

BENT PIPE, FITTINGS, FLANGES AND VALVE COVERS SHALL BE SHOP ASSEMBLED FROM SECTIONS OF MOLDED PIPE COVERING OR BLOCK WITH THE JOINTS FITTED TIGHTLY AND CEMENTED WITH ADHESIVE CEMENT. ALL INSULATION SURFACES INCLUDING THE OUTER SURFACE SHALL BE COATED WITH VAPOR SEALER COATING AT THE TIME OF INSTALLATION. VOIDS BETWEEN INSULATION AND FITTING SHALL BE FILLED WITH TIGHTLY PACKED MINERAL WOOL. ADJACENT PIPE INSULATION SHALL BE FITTED TIGHTLY TO THE BUTT ENDS OF THE FITTING COVER USING VAPOR SEALER COATING IN THE JOINTS. THE INSULATION SHALL BE SECURED IN A MANNER SIMILAR TO THAT SPECIFIED FOR STRAIGHT PIPE. WHERE STEEL BANDS ARE INCONVENIENT TO INSTALL NO. 18 BWG GALVANIZED IRON WIRE APPLIED OVER ONE INCH WIDE ASBESTOS TAPE MAY BE USED.

MACHINERY, TANKS AND HEAT EXCHANGERS MAY BE INSULATED WITH EITHER MOLDED, CURVED OR SHAPED SEGMENTED BLOCK OR BLANKET OF FELTED TYPE MATERIALS WITHIN LIMITATION OF COMMERCIAL STANDARDS. WHEN METAL SURFACE TEMPERATURES ARE LESS THAN 0°F, A DOUBLE LAYER CONSTRUCTION SHALL BE USED. INSULATION SHALL BE INSTALLED WITH ALL JOINTS STAGGERED FOR BOTH SINGLE AND DOUBLE LAYER CONSTRUCTION. ALL INSIDE SURFACES AND BUTT EDGES SHALL BE THROUGHLY COATED WITH A THIN LAYER OF VAPOR SEALER COATING. OUTER SURFACES SHALL BE COATED AT TIME OF INSTALLATION. AN ANGLE IRON SUPPORT SHALL BE FITTED FOR THE BASE COURSE OF INSULATION BLOCK ON VERTICAL EQUIPMENT. THE HORIZONTAL LEG OF THE ANGLE IRON SHALL BE APPROXIMATELY 1/2 INCH LESS IN LENGTH THAN THE INSULATION THICKNESS.

POLYURETHANE RIGID FOAM AND ANTISWEAT FLEXIBLE UNICELLULAR FOAM PLASTIC INSULATION SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

△1 2. INSULATING MATERIALS (CONTINUED)

HIGH TEMPERATURE (500°F TO 999°F)

CALCIUM SILICATE	- FED. SPEC. HH-I-523

PROTECTION OF INSULATION

PRIOR TO APPLICATION OF LAGGING, INSULATION LOCATED IN POSITIONS EXPOSED TO THE WEATHER OR UNDUE MOISTURE SHALL BE PROTECTED WITH A 1/4 INCH WEATHER-RESISTANT INSULATION, REINFORCED WITH HARDWARE CLOTH AND SECURED WITH NO. 16 B & S COPPER WIRE. PARTICULAR CARE SHALL BE TAKEN TO AVOID CRACKS OR OPENINGS IN THE CONTINUITY OF THE COMPLETED INSULATION AND LAGGING, ESPECIALLY IN THE VICINITY OF VALVES, FLANGES OR FITTINGS, IN ORDER TO PREVENT ENTRANCE OF WATER.

IN LOCATIONS WHERE THE COMPLETED INSULATION AND LAGGING IS LIABLE TO ABUSE, (OTHER THAN TURBINES) PROTECTIVE GALVANIZED SHEET METAL LAGGING OF NO. 20 USSG SHALL BE INSTALLED. THIS DOES NOT REQUIRE LAGGING OF TURBINE CASINGS. ALL INSULATION AND LAGGING ALONGSIDE OF HATCHES SUBJECT TO MECHANICAL INJURY SHALL BE PROTECTED BY 1/4 INCH CHECKERED PLATES AND HEAVY ANGLES. INSULATION WHICH IS SUBJECT TO CRUSHING BY SUPPORTING HANGERS ON ITS OUTSIDE SHALL HAVE ADEQUATE PROTECTION AGAINST CRUSHING.

3. LAGGING MATERIALS

LAGGING MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE FOLLOWING SPECIFICATIONS:

FIBROUS GLASS CLOTH, TAPE AND THREAD	- MIL. SPEC. MIL-C-20079
BRATTICE CLOTH FOR -20°TO 500°F SERVICE	- MIL. SPEC. MIL-C-788
ADHESIVE LAGGING CEMENTS	- MIL. SPEC. MIL-A-3316
△3 "MAC-TAC" ALUMINUM SEALING TAPE	- MORGAN ADHESIVE TA-8106

△2 •REWETTABLE GLASS CLOTH LAGGING SHALL BE USED FOR PIPE AND MACHY. COVERING WHICH IS INTENDED FOR USE AS THE JACKETING MATERIAL OVER INSULATION WHERE THE TEMPERATURE OF THE INSULATED SURFACE IS MORE THAN 125°F, EXCEPT THAT IT MAY NOT BE USED ON FLANGES OR WHERE IT WILL BE IN CONTACT WITH HEATED METAL.

HARDWARE CLOTH SHALL BE NO. 20 BWG. STEEL WIRE 1/2 INCH MESH HOT DIPPED GALVANIZED.

4. ADHESIVES, COATING AND SEALING COMPOUNDS

ADHESIVES	MIL-A-3316 MIL-A-15199*
BEDDING COMPOUND	MIL-B-19564
COATING COMPOUND	MIL-C-19565
END SEALING COMPOUND	MIL-C-22395
FINISHING AND/OR INSULATION CEMENTS	SS-C-160

* NOT APPLICABLE FOR ADHERING FIBROUS GLASS INSULATION AND/OR LAGGING.

5. APPLICATION OF INSULATION AND LAGGING

IN GENERAL, ALL PIPING SHALL BE TESTED BEFORE APPLICATION OF INSULATION AND LAGGING.

SAMPLES OF THE VARIOUS TYPES OF INSULATION PROPOSED FOR THE ABOVE SPECIFIED USES SHALL BE SUBMITTED.

△1 APPLICATION OF ANTISWEAT INSULATION AND LAGGING

• WHERE PIPING PASSES THROUGH HUMID SPACES SUCH AS THE GALLEY MOLDED FIBROUS GLASS INSULATION LAGGED WITH REWETTABLE FIBROUS GLASS CLOTH SHALL BE USED.

IN AREAS OF THE MACHY. SPACE WHERE DRIPPING MAY CAUSE DAMAGE OR DISCOMFORT TO PERSONNEL FLEXIBLE ELASTOMETRIC FOAMED PLASTIC SHALL BE USED. LAGGING OF FOAMED PLASTIC IS NOT REQUIRED.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-377-1

FRAME 2 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-377-1

FRAME 3 OF 5

…ENT REQUIRING INSULATION AND LAGGING

TEMP. °F	REMARKS
60	FOR LOCATION OF ALL ITEMS LISTED BELOW SEE REF NO. 2
950	
950	
950	
740	
550	
600	
550	
[illegible]	
[illegible]	
480	
[illegible]	
[illegible]	SEE M 4650 [illegible]
[illegible]	SEE M 4650 [illegible]
400	
380	
353	
338	
284	
284	
[illegible]	
[illegible]	
230	
213	
212	
[illegible]	
[illegible]	
160	
195	
193	
180	
160	
150	
144	
140	
50	
45	
[illegible]	
105	
160	

TANK

TABLE A-1

CELLULAR GLASS INSULATION
FOR COOLERS, TANKS, ETC.

DIAMETER OF UNIT INCHES	DESIGN INTERNAL OPERATING TEMPERATURE °F		
	BELOW -20	-20 THRU 35	OVER 35
	NOMINAL THICKNESS, INCHES		
	3-1/2	3	2
25 thru 36	4	3-1/2	2
37 thru 48	4-1/2	4	2

5. (c) HIGH TEMPERATURE (500°F TO 999° F)(CONTINUED)

PIPING REQUIRING HIGH TEMPERATURE INSULATION & LAGGING			
SERVICE	DIAG. NO.	TEMP. RANGE ° F	REMARKS
SPRHTD. STM TO PROPULSION TURBS., S.S. TURBO GENS. & PIPING FROM SUPERHEATER TO CONTROL DESUPERHEATER	4650-111-20-10	900 - 999	SEE SPECIAL NOTE "2"
EMERG. DIESEL GEN EXH.		800-899	
STANDBY DIESEL GEN EXH.			
GLAND SEAL SYS. & DRAINS	4650-111-20-30&31		
GLAND LEAK-OFF & DRAINS	4650-111-20-30&31	700-799	
FIRST H.P. BLEED STEAM & DRAINS	4650-111-20-13		
SECOND H.P. BLEED & DRAINS	4650-111-20-13	600-699	
BOILER PRESSURE DESUPERHEATER STEAM & DRAINS	4650-111-20-11	500-599	
BOILER BLOWDOWN PIPING	4650-111-20-17		
SOOT BOILER & DRAINS	4650-111-20-11		
SAT. STEAM FROM DRUM TO SUPHTR.	4650-111-20-10		
150# AUXILIARY STEAM & DRAINS	4650-111-20-11		

SPECIAL NOTES:

1. ESCAPE PIPING OR RELIEF VALVE DISCHARGE LINES TO BE INSULATED ONLY AS NECESSARY TO PROTECT PERSONNEL AGAINST INJURY OR AREAS WHERE RADIATION FROM THE PIPING MIGHT BE OBJECTIONABLE. THE LINES WHICH ARE REQUIRED TO BE INSULATED WILL HAVE THE FOLLOWING THICKNESSES OF MEDIUM TEMP. INSULATION:
(A) 3 1/2" IPS & BELOW - 1" THK. (B) 4" IPS & ABOVE - 1 1/2" THK. SUPERHEATER SAFETY VALVE ESCAPE PIPING TO BE INSULATED WITH 1 1/2" THK, HIGH TEMP. INSULATION.

△ 2. THE SUPERHEATER CONTROL PIPING SHALL BE INSULATED AND LAGGED WITH FIBROUS GLASS TAPE MIL SPEC. MIL-C-20079 CLASS III. COAT TAPE WITH BENJAMIN FOSTER 60-60 FIRE & WATER RESISTANT MASTIC.

6. FLANGE, VALVE AND FITTING INSULATION AND LAGGING

ALL FLANGES, VALVES AND FITTINGS SHALL BE COMPLETELY INSULATED AND LAGGED EQUAL TO THAT SPECIFIED FOR THE ATTACHED PIPING.

IN THE MACHINERY SPACES, PIPING JOINTS (FLANGES, UNIONS, ETC.) VALVE AND FITTING JOINTS WHICH MAY BE BROKEN FOR PERIODIC MAINTENANCE OR FOR REPAIRS, AND VALVES FOR SERVICES SUBJECT TO FREQUENT ATTENTION SUCH AS REDUCING AND REGULATING VALVES SHALL BE INSULATED WITH EASILY REMOVABLE TAILORED PADS OR MOLDED FORMS. THE PADS SHALL BE OF FIBROUS GLASS CLOTH OF THE QUALITY SPECIFIED UNDER ARTICLE 3, FILLED WITH QUILTED FIBROUS GLASS. PIPE INSULATION SHALL BE TAPERED TO PERMIT THE REMOVAL OF ANY NUTS AND BOLTS. THE PAD INSULATION SHALL OVERLAP THE OUTER BEVELED EDGE OF THE PIPE INSULATION APPROXIMATELY TWO (2) INCHES.

FOR SERVICES NOT INCLUDED IN THE FOREGOING, INSULATING CEMENT MAY BE TROWELED ON TO TOTAL PIPE INSULATION THICKNESS AND THEN COATED WITH A 1/2 INCH HARD SURFACE OF INSULATING CEMENT REINFORCED WHERE NECESSARY WITH HARDWARE CLOTH.

THESE REQUIREMENTS SHALL APPLY ALSO TO OTHER LOCATIONS WHERE FLANGES, VALVES AND FITTINGS ARE NOT EXPOSED TO WEATHER OR UNDUE MOISTURE.

7. MACHINERY AND EQUIPMENT INSULATION AND LAGGING

INSULATION

SURFACES OF LARGE EXTENT, SUCH AS BOILER DRUMS AND SUPERHEATER HEADERS, UPTAKES, TURBINES, PUMPS, HEATERS, EVAPORATORS, ETC., SHALL BE INSULATED TO THE MINIMUM THICKNESS INDICATED BY TABLE F IN ARTICLE 8.

THE INSULATION SHALL BE OF MOLDED FORMS WITHIN LIMITATIONS OF COMMERCIAL STANDARDS. ALL INSULATION SHALL BE TIGHTLY WIRED OR BANDED TO PREVENT SETTLING, AND ALL JOINTS POINTED UP WITH INSULATING CEMENT. WHERE NECESSARY, INSULATION ANCHORS SHALL BE PROVIDED.

IN LIEU OF MOLDED FORMS FOR SURFACES OF LARGE EXTENT, FELTED, BLANKET TYPE OR FLEXIBLE (ELASTOMERIC) FORMED SHEET MATERIAL AS SPECIFIED UNDER ARTICLE 2 MAY BE USED.

IN LIEU OF MOLDED INSULATION, MANHOLES, HANDHOLES, ETC., MAY BE INSULATED AND LAGGED WITH REMOVAL TAILORED PADS MADE OF FIBROUS GLASS CLOTH AS SPECIFIED UNDER ARTICLE 3, FILLED WITH QUILTED FIBROUS GLASS. LARGE CUMBERSOME PADS OF BLANKETS, OR A MULTIPLICITY OF PADS, SHALL NOT BE USED TO COVER LARGE SURFACES.

△△ LAGGING

ALL EQUIPMENT INSULATION, EXCEPT BOILER SMOKESTACKS FOR HULL 4650 ONLY, WILL BE HIGH TEMPERATURE CALCIUM SILICATE BLOCK INSULATION AS MANUFACTURED BY JOHNS MANVILLE OR EQUAL. THE OUTER SURFACE OF THE INSULATION SHALL BE PROTECTED WITH ½" THICK COATING OF HARD FINISH INSULATING CEMENT, REINFORCED WITH HARDWARE CLOTH AND FINISHED WITH REWETTABLE FIBROUS GLASS CLOTH.

BOILER SMOKESTACKS FOR HULL 4650 ONLY, SHALL BE INSULATED WITH FIBROUS GLASS INSULATION AND FINISHED WITH REWETTABLE FIBROUS GLASS CLOTH.

5. (b) MEDIUM TEMPERATURE (126°F TO 499°F)(CONTINUED)

PIPING REQUIRING MEDIUM TEMPERATURE INSULATION & LAGGING			
SERVICE	DIAG. NO.	TEMP. RANGE °F	REMARKS
CONDENSATE SAMPLING	4650-111-20-25	200-299	
FEEDWATER ANALYZER COMP. W/ PUMP DISCH	4650-111-20-25		
		400 to 499	
H.P. FEED PIPING & DRAINS	4650-111-20-25		
AUX. EXHAUST MAIN	4650-111-20-13		
CROSSOVER BLEED STEAM & DRAINS	4650-111-20-13		
BOILER WATER SAMPLING	4650-111-20-25		
4TH STAGE FEED HEATER DISCHARGE	4650-111-20-25		
3RD STAGE FEED HEATER DISCHARGE	4650-111-20-25	300 to 399	
SAFETY VALVE ESCAPE PIPING	4650-111-20-17		SEE SPECIAL NOTE NO.1 (A)(B)
L.P. BLEED STEAM & DRAINS	4650-111-20-13	200 to 299	
STEAM HEATING SYSTEM	———		
35# STEAM SYSTEM OUT OF D.C. HEATER	———		
MAIN FEED PUMP SUCTION & DISCHARGE	4650-111-20-23		
F. O. SERVICE DISCHARGE & RECIRCULATING FROM HEATER	4650-111-20-64		
L.P. STEAM SERVICE	4650-111-20-13		
F.O. & C.O. TANK HEATING STEAM SUPPLY & RETURNS	4650-111-20-31		
ATMOS. DRAIN PUMP SUCTION & DISCHARGE	4650-111-20-23	(CONT'D. ABOVE)	
F.W. DRAINS	4650-111-20-19	126 to 199	
MAIN COND. PUMP DISCHARGE			
HOT FRESH WATER SYSTEM	4650-111-20-40		
CARGO OIL TANK CLEANING & WASHDOWN	4650-111-20-48		
CARGO OIL TANK HEATING	4650-111-20-33		

5. (c) HIGH TEMPERATURE (500°F TO 999° F)

THICKNESS

ALL PIPING HAVING NORMAL INTERNAL DESIGN TEMPERATURES OF 500°F AND OVER SHALL BE INSULATED WITH HIGH TEMPERATURE INSULATION OR WITH A COMBINATION OF HIGH TEMPERATURE AND MEDIUM TEMPERATURE INSULATION TO THE MINIMUM THICKNESS INDICATED IN TABLE E IN ARTICLE 8.

SINGLE LAYER MOLDED INSULATION MAY BE USED WHERE THERMAL CONDUCTIVITY AND SURFACE TEMPERATURE REQUIREMENTS FOR MULTILAYER INSULATION ARE MET AND PROVISION FOR THERMAL EXPANSION IS INCLUDED.

APPLICATION OF INSULATION

ON PIPES SMALLER THAN 2 INCHES, THE ENTIRE INSULATION SHALL CONSIST OF ONE LAYER OF HIGH TEMPERATURE INSULATION. ON PIPES 2 INCHES AND LARGER, SINGLE OR MULTILAYER APPLICATIONS MAY BE MADE. IF OF A SINGLE LAYER IT SHALL BE AT LEAST EQUAL IN EFFECTIVENESS OF MULTILAYER. IF OF MULTILAYER, THE INSULATION SHALL CONSIST OF AN INNER LAYER OF HIGH TEMPERATURE INSULATION AND AN OUTER LAYER OF MEDIUM TEMPERATURE INSULATION TO MAKE UP THE TOTAL MINIMUM THICKNESS SPECIFIED, OR ON SINGLE LAYER INSULATION THE THICKNESS SHALL COMPLY WITH THE TOTAL SPECIFIED IN TABLE E. FLANGES, VALVES AND FITTINGS FOR PIPING, 2 INCHES AND LARGER, SHALL BE PROVIDED WITH EASILY REMOVABLE AND REPLACEABLE TAILORED PADS.

THE INSULATION SHALL BE APPLIED AND SECURED IN THE MANNER SPECIFIED FOR THE MEDIUM TEMPERATURE INSULATION, EXCEPT THAT MODIFICATIONS WILL BE PERMITTED AS APPROVED. INSULATING CEMENT FOR THE HIGH TEMPERATURE INSULATION SHALL BE OF THE HIGH TEMPERATURE TYPE SPECIFIED UNDER ARTICLE 4.

APPLICATION OF LAGGING

HIGH TEMPERATURE INSULATION SHALL BE LAGGED AS DESCRIBED FOR MEDIUM TEMPERATURE LAGGING.

△ 5. (a) LOW TEMPERATURE (-30°F TO 125°F)(CONTINUED)

APPLICATION OF LAGGING

AFTER INSTALLATION OF THE INSULATION AND WHILE THE VAPOR SEALER APPLIED ABOVE IS STILL
FIBROUS GLASS CLOTH OR TAPE, OR THE CLOTH MAY BE APPLIED AFTER DRYING OF THE VAPOR
ADHESIVE TAPE, WHERE USED, SHALL BE WOUND SPIRALLY WITH NOT LESS THAN A 3/8 INCH OVERLAP. THE
OR CEMENTED TO THE INSULATION. ALTERNATE MATERIALS MAY BE SUBSTITUTED SUBJECT TO APPROVAL.

ALUMINUM JACKETED INSULATION (JOHNS-MANVILLE META-LOK OR EQUAL) SHALL BE INSTALLED
RECOMMENDATIONS.

PIPING REQUIRING LOW TEMPERATURE INSULATION &		
SERVICE	DIAGRAM NO.	TEMP. RAN
ICE WATER SYSTEM	4650-111-20-40	36 - 4
FREON SUCT. - MANIFOLD TO EVAP.	———	1 - 3
FREON - EXPANSION VLV. TO EVAP.		
FREON SUCT. - COMPRESSOR TO EVAP.	———	- 20
FREON - EXPANSION VLV. TO EVAP.		
FREON SUCT. - COMPRESSOR TO EVAP.	4650-111-20-86	-20
FREON - EXPANSION VLV. TO EVAP.		

5. (b) MEDIUM TEMPERATURE (126°F TO 499°F)

THICKNESS

ALL PIPING HAVING A NORMAL DESIGN INTERNAL TEMPERATURE BETWEEN 126°F AND 499°F SHALL BE
INSULATION, IN ACCORDANCE WITH TABLE D IN ARTICLE 8.

SINGLE LAYER MOLDED INSULATION MAY BE USED WHERE THERMAL CONDUCTIVITY AND SURFACE TE
PROVISION FOR THERMAL EXPANSION IS INCLUDED.

PRELAGGED METAL OR FIBROUS GLASS INSULATION SHALL BE USED AND THE TH
LAGGING MATERIALS SHALL BE IN ACCORDANCE WITH ARTICLE 3.

APPLICATION OF INSULATION

SINGLE LAYER INSULATION ON STRAIGHT PIPE SHALL BE SECURED AT 3 POINTS FOR EACH 3 FOOT LEN
WIRE OR BY METAL BANDS. AFTER SECURING THE WIRE OR BANDS, THE PROTRUDING ENDS SHALL BE BENT FLAT,

WHERE PIPE INSULATION WITH A TOTAL THICKNESS OF OVER 3 INCHES SHALL BE APPLIED IN TWO LAYER
FIRST LAYER WITH ALL JOINTS TIGHTLY BUTTED SHALL BE SECURELY WIRED TO THE PIPE WITH NO. 18 BWG ANNE
LOOPS PER SECTIONAL LENGTH OR ONE LOOP PER FOOT LENGTH ON PIPES UP TO AND INCLUDING 6 INCH DIA
SECTIONAL LENGTH ON LARGER PIPES. THE SECOND LAYER SHALL BE APPLIED OVER THE FIRST LAYER SO THAT
JOINTS ARE STAGGERED, AND SHALL BE HELD IN PLACE ON PIPES UP TO AND INCLUDING 6 INCHES WITH NOT
NEALED IRON WIRE AND 4 LOOPS ON LARGER PIPES. THE ENDS OF THE WIRE SHALL BE TIGHTLY TWISTED, BENT
TION SO AS TO LEAVE NO PROJECTIONS. METAL BANDS, PROPERLY SECURED MAY BE USED IN LIEU OF WIRE.
PERMITTED AS APPROVED.

ON BENT PIPE, WHERE THE RADIUS OF THE BEND PERMITS, SEGMENTS OF MOLDED INSULATION SHALL
CLOSED WITH INSULATING CEMENT. WHERE THIS PROCEDURE IS NOT FEASIBLE, BUILT-UP INSULATION MADE OF
BE USED. IN THIS CASE, THE INSULATION SHALL BE COVERED WITH A JACKET OF HARD SURFACE INSULATING C
WHERE THE OUTSIDE DIAMETER OVER THE INSULATION IS 12 INCHES OR GREATER.

APPLICATION OF LAGGING

WHERE PIPING IS NOT EXPOSED TO WEATHER, THE INSULATION SHALL BE COVERED WITH TAPE OR CLO
PLIED WITH ADHESIVE LAGGING CEMENT, MIL. SPEC. MIL-A-3316, TYPE II.

WHERE PIPING IS EXPOSED TO WEATHER IT SHALL BE PROTECTED BEFORE LAGGING AS DESCRIBED IN AR

9. INSULATION AND LAGGING FOR VENTILATION AND AIR CONDUCTION DUCTS

GENERAL

ALL MATERIALS IN ACCOMMODATION SPACES AND SERVING AREAS MUST BE APPROVED AND RATED AS INCOMBUSTIBLE MATERIALS CONFORMING TO U.S.C.G. REGULATIONS 164.009, 164.007, 164.012-5c. ELSEWHERE, ALL MATERIALS MUST BE FIRE RETARDANT OR SELF-EXTINGUISHING. ALL MATERIALS AND PROCEDURES ARE SUBJECT TO APPROVAL.

9a RECTANGULAR DUCTS

RECTANGULAR DUCTS SHALL BE INSULATED WITH A MINIMUM 3 POUND DENSITY FIBROUS GLASS INSULATING BOARD 1" THICK WITH A MINIMUM .002 THICK ALUMINUM FOIL VAPOR BARRIER. ALL JOINTS AND SEAMS SHALL BE LAPPED 3", WHENEVER POSSIBLE AND SEALED WITH AN ALUMINUM FOIL TAPE 3" WIDE. TO FURTHER INSURE VAPOR BARRIER INTEGRITY ALL SEAMS AND JOINTS SHALL BE SEALED WITH APPROVED SEALER.

9b ROUND DUCTS

ROUND DUCTS SHALL BE INSULATED WITH A MINIMUM 1.5# DENSITY FOIL FACED BLANKET, WITH A MINIMUM .002 THICK ALUMINUM FOIL VAPOR BARRIER. ALL JOINTS AND SEAMS SHALL BE LAPPED 3", WHENEVER POSSIBLE AND SEALED WITH AN ALUMINUM FOIL TAPE 3" WIDE.

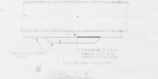
9c PROTECTION OF INSULATION

IN AREAS WHERE INSULATION MAY BE SUBJECT TO DAMAGE, GALVANIZED METAL SHEATHING / GUARDS, AS REQUIRED, SHALL BE FURNISHED. METAL SHEATHING THICKNESS SHALL BE COMPATIBLE WITH THE AREA INVOLVED, BUT IN NO CASE LESS THAN NO. 16 USSG STEEL.

9d INSULATION TYPE AND THICKNESS

THE INSULATION TYPE AND THICKNESS SHALL BE AS DESCRIBED AND INDICATED ON THE FOLLOWING PLANS:

M-4650-191-15-1	M-4650-191-17-1
M-4650-191-15-2	M-4650-191-17-2
M-4650-191-15-3	M-4650-191-18-1
M-4650-191-15-4	M-4650-191-18-2
M-4650-191-16-1	M-4650-191-19-1
M-4650-191-16-2	M-4650-191-19-2


MINIMUM OF 2" CLEAR AREA, WITH NO RESTRICTIONS, REQUIRED TO ALLOW INSULATION EXPANSION JOINT TO OPERATE PROPERLY
4"
1/2"
4"
VAPOR BARRIER JOINT SEALER
POLYURETHANE INSULATION
TYP. FREON PIPE
FIBROUS GLASS CLOTH LAGGING
A MINIMUM OF 2" THICK FIBROUS GLASS TO BE COMPRESSED IN 1/2" VOID
POLYURETHANE INSULATION

DETAIL "12-B"

TYP. INSULATION EXPANSION JOINT

FOR LOCATION SEE M4650-401-6

5. THICKNESS OF INSULATION (CONTINUED)

TABLE B

EXPANDED POLYSTYRENE PIPE INSULATION - 1

OPERATING TEMPERATURE	-30°F to 0°F	1°F to 35°F	36°F to 49°F	50°F to 99°F
PIPE SIZE INCHES	SPECIAL BRINE THICKNESS, INCHES	BRINE THICKNESS, INCHES	ICE WATER THICKNESS, INCHES	
Up to 3/4	2.60	1.70	1.20	1 inch
1 to 1-1/4	2.75	2.00	1.20	
1-1/2 to 5-1/2	2.95	-	-	
1-1/2 to 7-1/2	-	2.40	-	
1-1/2 to 12	-	-	1.35	
Above 12	4.00	3.00	1.50	

TABLE B-1

EXPANDED POLYSTYRENE INSULATION FOR COOLERS, TANKS, ETC. - 1

OPERATING TEMPERATURE	-30°F to 0°F	1°F to 35°F	36°F to 49°F	50°F to 99°F
THICKNESS	4 INCHES	3 INCHES	1-1/2 INCHES	1 INCH

1. The thicknesses indicated in these tabulations shall be used as a guide. The manufacturer's recommendations shall take precedence.

TABLE C

POLYURETHANE RIGID FOAM PIPE INSUALTION - 2

OPERATING TEMPERATURE	-30°F to 0°F	1°F to 35°F	36°F to 49°F	50°F to 99°F
PIPE SIZE INCHES	SPECIAL BRINE THICKNESS, INCHES	BRINE THICKNESS, INCHES	ICE WATER THICKNESS, INCHES	
Up to 3/4"	1-1/2"	1-1/2"	1"	1"
1" to 1-1/4"	2"	1-1/2"	1"	1"
1-1/2" to 5-1/2"	2"	1-1/2"	1"	1"
6" to 7-1/2"	2-1/2"	2"	1"	1"
8" to 12"	2-1/2"	2"	1"	1"
Above 12"	3"	2"	1"	1"

TABLE C-1

POLYURETHANE RIGID FOAM INSULATION FOR COOLERS, TANKS, ETC. - 2

OPERATING TEMPERATURE	-30°F to 0°F	1°F to 35°F	36°F to 49°F	50°F to 99°F
THICKNESS	2.9 INCHES	2.2 INCHES	1.4 INCHES	1.1 INCHES

2. Based on 100°F at 90 per cent RH condition. These thicknesses shall be used as a guide. The manufacturer's recommendations shall take precedence.

TABLE D

PIPE INSULATION FOR MEDIUM TEMPERATURE INSULATION

NOMINAL PIPE SIZE INS.	DESIGN INTERNAL TEMPERATURE °F			
	126 to 199	200 to 299	300 to 399	400 to 499
	NOMINAL THICKNESS, INCHES			
1-1/2 and under	1	1	1	1-1/2
2	1	1	1	1-1/2
2-1/2 to 3	1	1	1	2
3-1/2	1	1	1	2
4	1	1	1-1/2	2
5	1	1	1-1/2	2
6	1	1	1-1/2	2
8	1-1/2	1-1/2	1-1/2	2
10	1-1/2	1-1/2	1-1/2	2
12	1-1/2	1-1/2	1-1/2	2
14 and over	1-1/2	1-1/2	2	2

TABLE E

PIPE INSULATION FOR HIGH TEMPERATURE INSULATION

NOMINAL PIPE SIZE INCHES	DESIGN INTERNAL TEMPERATURE, °F				
	500° TO 599°	600° TO 699°	700° TO 799°	800° TO 899°	900° TO 999°
	NOMINAL THICKNESS, INCHES				
1-1/2 AND UNDER	2	2	2-1/2	2-1/2	3
2	2	2	2-1/2	3-1/2	3-1/2
2-1/2	2	2	2-1/2	3-1/2	3-1/2
3	2	2-1/2	3	3-1/2	4
3-1/2	2	2-1/2	3	4	4
4	2	2-1/2	3	4	4
5	2	3	3-1/2	4	4
6	2	3	3-1/2	4	4-1/2
8	2	3	3-1/2	4	4-1/2
10	2	3	3-1/2	4	5
24	2-1/2	3	4	4-1/2	5
28	2-1/2	3-1/2	4	4-1/2	5

TABLE F

INSULATION ON LARGE SURFACES

DESIGN INTERNAL TEMPERATURE °F	THICKNESS OF INSULATION INCHES			
	HIGH TEMPERATURE INSULATION	MEDIUM TEMPERATURE INSULATION	INSULATING CEMENT	TOTAL
126 TO 199	-	1	1/2	1-1/2
200 TO 299	-	1-1/2	1/2	2
300 TO 399	-	2	1/2	2-1/2
400 to 499	-	2-1/2	1/2	3
500 to 599	-	3	1/2	3-1/2
600 to 699	1	2	1/2	3-1/2
700 to 799	1-1/2	2	1/2	4
800 to 899	2-1/2	1-1/2	1/2	4-1/2
900 to 999	3	1	1/2	4-1/2

7. MACHINERY AND EQUIPMENT INSULATION AND LAGGING (CONTINUED)

MACHINERY AND MISCELLANEOUS EQUIPMENT REQUIRING INSULATION AND LAGGING

MK.	DESCRIPTION	QTY.	TEMP. °F	REMARKS
77	FRESH WATER COOLER	1	60	FOR LOCATION OF ALL ITEMS LISTED BELOW SEE REF NO. 2
4	MANEUVERING VALVE OR THROTTLE	1	950	
4	H.P. TURBINE	1	950	
62	S.S. TURBO-GEN. - TURBINE	1	950	
55	4TH STAGE FEED WATER HEATER	1	740	
30	MAIN FEED PUMP - TURBINE END	2	550	
54	3RD STAGE FEED WATER HEATER	1	600	
49	BOILER DRUMS - WATER	2	550	
168	EMERGENCY DIESEL GEN. MUFFLER	1	920	
79	STANDBY DIESEL GEN. MUFFLER	1	920	
5	L.P. TURBINE	1	480	
50	AIR PREHEATER	2	712	
-	PREHEATER DISCHARGE TO BOILERS	2	568	SEE M-4650-362-1
-	BOILER UPTAKES	2	712	SEE M-4650-362-1
5	L.P. CROSSOVER STEAM	1	400	
37	MN. CONDENSER VACUUM PUMPS	2	380	
67	TANK CLEANING HEATER DRAIN COOLER	1	353	
57	EVAP. PLANT AIR EJECTOR	2	338	
30/31	MAIN & PORT FEED PUMP - WATER END	3	284	
52	DEAERATOR FEED HEATER	1	284	
—	BOILER DOWNCOMERS	6	940	
—	ASTERN STEAM PIPING	1	940	
142	FUEL OIL HEATERS	2	230	
57	EVAPORATOR AFTER CONDENSER	1	213	
56	ATMOS. DRAIN AND INSPECTION TANK	1	212	
49	BOILER DRUMS - STEAM	2	750	
117	FREON PUMPS	4	-20	
74	CARGO COIL HOT WATER CIRC. PUMP	2	160	
53	1ST STAGE FEED WATER HEATER & GLAND EXHAUST COND.	1	195	
57	EVAPORATOR SW. HEATER	1	193	
67	TANK CLEANING HEATER	1	180	
75	CARGO COIL HOT WATER HEATER	1	160	
1	DOMESTIC WATER HEATER	1	150	
57	EVAPORATOR - 1ST STAGE CONDENSER	1	144	
33	HOT WATER CIRC. PUMP - WATER END	1	140	
34	ICE WATER CIRC. PUMP - WATER END	1	50	
61	SCUTTLEBUTT	1	45	
99	FREON ACCUMULATOR	2	-20	
59	REFRIGERATED CARGO CONDENSERS	8	105	
113	CARGO-TANK HEATING HOT WATER EXPANSION TANK	1	160	
—	CARGO REFRIG. OIL RECEIVER	1	-25	
—	CARGO REFRIG. MIXING EDUCTOR	4	-20	
—	CARGO REFRIG. DEHYDRATOR	2	-20	
—	CARGO REFRIG. LIQUID AND GAS SEPARATORS	4	-20	
—	CARGO REFRIG. PUMP-OUT RECEIVER	1	-20	

8. THICKNESS OF INSULATION

TABLE A

CELLULAR GLASS PIPE INSULATION

NOMINAL PIPE SIZE INCHES	DESIGN INTERNAL OPERATING TEMPERATURE, °F		
	BELOW -20	-20 THRU 35	OVER 35
	NOMINAL THICKNESS, INCHES		
1/4 to 8	3	2-1/2	-
1/4 to 4-1/2	-	-	1-1/2
5 and over	-	-	2

TABLE A-1

CELLULAR GLASS INSULATION FOR COOLERS, TANKS, ETC.

DIAMETER OF UNIT INCHES	DESIGN INTERNAL OPERATING TEMPERATURE, °F		
	BELOW -20	-20 THRU 35	OVER 35
	NOMINAL THICKNESS, INCHES		
	3-1/2	3	2
25 thru 36	4	3-1/2	2
37 thru 48	4-1/2	4	2

5. (c) HIGH TEMPERATURE (500°F TO 999°F) (CON

SERVICE
SPRHTD. STM TO PROPULSION TURBS., S.S. TURBO GENS. & PIPING FROM SUPERHEATER TO CONTROL DESUPERHEATER
EMERG. DIESEL GEN EXH.
STANDBY DIESEL GEN EXH.
GLAND SEAL SYS. & DRAINS
GLAND LEAK-OFF & DRAINS
FIRST H.P. BLEED STEAM & DRAINS
SECOND H.P. BLEED & DRAINS
BOILER PRESSURE DESUPERHEATER
BOILER BLOWDOWN PIPING
SOOT BOILER & DRAINS
SAT. STEAM FROM DRUM TO SUPHTR.
150# AUXILIARY STEAM & DRAINS

SPECIAL NOTES:

1. ESCAPE PIPING OR RELIEF VALVE DISCHARGE LIN
RADIATION FROM THE PIPING MIGHT BE OBJECTI
OF MEDIUM TEMP. INSULATION:
(A) 3 1/2" IPS & BELOW - 1" THK. (B) 4" IPS & A
TEMP. INSULATION.

2. THE SUPERHEATER CONTROL PIPING SHALL BE IN
BENJAMIN FOSTER 6060 FIRE & WATER RES

6. FLANGE, VALVE AND FITTING INSULATION AND

ALL FLANGES, VALVES AND FITTINGS SHAL

IN THE MACHINERY SPACES, PIPING JOINTS
TENANCE OR FOR REPAIRS, AND VALVES FOR SERVICES
WITH EASILY REMOVABLE TAILORED PADS OR MOLDED
UNDER ARTICLE 3, FILLED WITH QUILTED FIBROUS
NUTS AND BOLTS. THE PAD INSULATION SHALL OVER

FOR SERVICES NOT INCLUDED IN THE FOREG
COATED WITH A 1/2 INCH HARD SURFACE OF INSULATI

THESE REQUIREMENTS SHALL APPLY ALSO TO
MOISTURE.

7. MACHINERY AND EQUIPMENT INSULATION AND L

INSULATION

SURFACES OF LARGE EXTENT, SUCH AS BOILE
BE INSULATED TO THE MINIMUM THICKNESS INDICATED

THE INSULATION SHALL BE OF MOLDED FORM
BANDED TO PREVENT SETTLING, AND ALL JOINTS POIN

IN LIEU OF MOLDED FORMS FOR SURFACES OF
FIED UNDER ARTICLE 2 MAY BE USED.

IN LIEU OF MOLDED INSULATION, MANHOLE
FIBROUS GLASS CLOTH AS SPECIFIED UND
PADS OF BLANKETS, OR A MULTIPLICITY OF PADS, SHAL

LAGGING

ALL EQUIPMENT INSULATION, EXCEPT BO
AS MANUFACTURED BY JOHNS MANVILLE OR EQ
OF HARD FINISH INSULATING CEMENT, REIN
BOILER SMOKESTACKS, FOR HULL 4650
FIBROUS GLASS CLOTH.

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-377-1

FRAME 4 OF 5

9. INSULATION AND LAGGING FOR VENTILATION AND AIR CONDUCTION DUCTS

GENERAL

ALL MATERIALS IN ACCOMMODATION SPACES AND SERVING AREAS MUST BE APPROVED AND RATED AS INCOMBUSTIBLE MATERIALS CONFORMING TO U.S.C.G. REGULATIONS 164.009, 164.007, 164.012-Sc. ELSEWHERE, ALL MATERIALS MUST BE FIRE RETARDANT OR SELF-EXTINGUISHING. ALL MATERIALS AND PROCEDURES ARE SUBJECT TO APPROVAL.

9.a RECTANGULAR DUCTS

RECTANGULAR DUCTS SHALL BE INSULATED WITH A MINIMUM 3 POUND DENSITY FIBROUS GLASS INSULATING BOARD 1" THICK WITH A MINIMUM .002 THICK ALUMINUM FOIL VAPOR BARRIER. ALL JOINTS AND SEAMS SHALL BE LAPPED 3", WHENEVER POSSIBLE AND SEALED WITH AN ALUMINUM FOIL TAPE 3" WIDE. TO FURTHER INSURE VAPOR BARRIER INTEGRITY ALL SEAMS AND JOINTS SHALL BE SEALED WITH APPROVED SEALER.

9.b ROUND DUCTS

ROUND DUCTS SHALL BE INSULATED WITH A MINIMUM 1.5# DENSITY FOIL FACED BLANKET, WITH A MINIMUM .002 THICK ALUMINUM FOIL VAPOR BARRIER. ALL JOINTS AND SEAMS SHALL BE LAPPED 3", WHENEVER POSSIBLE AND SEALED WITH AN ALUMINUM FOIL TAPE 3" WIDE.

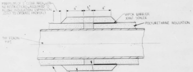
9.c PROTECTION OF INSULATION

IN AREAS WHERE INSULATION MAY BE SUBJECT TO DAMAGE, GALVANIZED METAL SHEATHING / GUARDS, AS REQUIRED, SHALL BE FURNISHED. METAL SHEATHING THICKNESS SHALL BE COMPATIBLE WITH THE AREA INVOLVED, BUT IN NO CASE LESS THAN NO. 16 USSG STEEL.

9.d INSULATION TYPE AND THICKNESS

THE INSULATION TYPE AND THICKNESS SHALL BE AS DESCRIBED AND INDICATED ON THE FOLLOWING PLANS:

M-4650-191-15-1	M-4650-191-17-1
M-4650-191-15-2	M-4650-191-17-2
M-4650-191-15-3	M-4650-191-18-1
M-4650-191-15-4	M-4650-191-18-2
M-4650-191-16-1	M-4650-191-19-1
M-4650-191-16-2	M-4650-191-19-2


MINIMUM OF 2" CLEAR AREA, WITH NO RESTRICTIONS, REQUIRED TO ALLOW INSULATION EXPANSION JOINT TO OPERATE PROPERLY
4"
1/2"
4"
VAPOR BARRIER JOINT SEALER
POLYURETHANE INSULATION
TYP. FREON PIPE
FIBROUS GLASS CLOTH LAGGING
A MINIMUM OF 2" THICK FIBROUS GLASS TO BE COMPRESSED IN 1/2" VOID
POLYURETHANE INSULATION

3

DETAIL "12-B"

TYP. INSULATION EXPANSION JOINT
FOR LOCATION SEE M-4650-402-6

8. THICKNESS OF INSULATION (CONTINUED)

TABLE B

EXPANDED POLYSTYRENE PIPE INSULATION - 1

OPERATING TEMPERATURE	-30°F to 0°F	1°F to 35°F	36°F to 49°F	50°F to 99°F
PIPE SIZE INCHES	SPECIAL BRINE THICKNESS, INCHES	BRINE THICKNESS, INCHES	ICE WATER THICKNESS, INCHES	
Up to 3/4	2.60	1.70	1.20	1 inch
1 to 1-1/4	2.75	2.00	1.30	
1-1/2 to 5-1/2	2.95	-	-	
1-1/2 to 7-1/2	-	2.40	-	
1-1/2 to 12	-	-	1.35	
Above 12	4.00	3.00	1.50	

TABLE C

POLYURETHANE RIGID FOAM PIPE INSUALTION - 2

OPERATING TEMPERATURE	-30°F to 0°F	1°F to 35°F	36°F to 49°F	50°F to 99°F
PIPE SIZE INCHES	SPECIAL BRINE THICKNESS, INCHES	BRINE THICKNESS, INCHES	ICE WATER THICKNESS, INCHES	
Up to 3/4"	1½"	1½"	1"	1"
1" to 1-1/4"	2"	1½"	1"	1"
1-1/2" to 5-1/2"	2"	1½"	1"	1"
6" to 7-1/2"	2½"	2"	1"	1"
8" to 12"	2½"	2"	1"	1"
Above 12"	3"	2"	1"	1"

TABLE D

PIPE INSULATION FOR MEDIUM TEMPERATURE INSULATION

NOMINAL PIPE SIZE INS.	DESIGN INTERNAL TEMPERATURE °F			
	126 to 199	200 to 299	300 to 399	400 to 499
	NOMINAL THICKNESS, INCHES			
1-½ and under	1	1	1	1-1/2
2	1	1	1	1-1/2
2-1/2 to 3	1	1	1	2
3-1/2	1	1	1	2
4	1	1	1-1/2	2
5	1	1	1-1/2	2
6	1	1	1-1/2	2
8	1-1/2	1-1/2	1-1/2	2
10	1-1/2	1-1/2	1-1/2	2
12	1-1/2	1-1/2	1-1/2	2
14 and over	1-1/2	1-1/2	2	2

TABLE B-1

EXPANDED POLYSTYRENE INSULATION
FOR COOLERS, TANKS, ETC. - 1

OPERATING TEMPERATURE	-30°F to 0°F	1°F to 35°F	36°F to 49°F	50°F to 99°F
THICKNESS	4 INCHES	3 INCHES	1-1/2 INCHES	1 INCH

1. The thicknesses indicated in these tabulations shall be used as a guide. The manufacturer's recommendations shall take precedence.

TABLE C-1

POLYURETHANE RIGID FOAM INSULATION
FOR COOLERS, TANKS, ETC. - 2

OPERATING TEMPERATURE	-30°F to 0°F	1°F to 35°F	36°F to 49°F	50°F to 99°F
THICKNESS	2.9 INCHES	2.2 INCHES	1.4 INCHES	1.1 INCHES

2. Based on 100°F at 90 per cent RH condition. These thicknesses shall be used as a guide. The manufacturer's recommendations shall take precedence.

TABLE E

PIPE INSULATION FOR HIGH TEMPERATURE INSULATION

NOMINAL PIPE SIZE INCHES	DESIGN INTERNAL TEMPERATURE, °F				
	500° TO 599°	600° TO 699°	700° TO 799°	800° TO 899°	900° TO 999°
	NOMINAL THICKNESS, INCHES				
1-1/2 AND UNDER	2	2	2-1/2	2-1/2	3
2	2	2	2-1/2	3-1/2	3-1/2
2-1/2	2	2	2-1/2	3-1/2	3-1/2
3	2	2-1/2	3	3-1/2	4
3-1/2	2	2-1/2	3	4	4
4	2	2-1/2	3	4	4
5	2	3	3-1/2	4	4
6	2	3	3-1/2	4	4-1/2
8	2	3	3-1/2	4	4-1/2
10	2	3	3-1/2	4	5
24	2-1/2	3	4	4-1/2	5
28	2-1/2	3-1/2	4	4-1/2	5

TABLE F

INSULATION ON LARGE SURFACES

DESIGN INTERNAL TEMPERATURE °F	THICKNESS OF INSULATION INCHES			
	HIGH TEMPERATURE INSULATION	MEDIUM TEMPERATURE INSULATION	INSULATING CEMENT	TOTAL
126 TO 199	-	1	1/2	1-1/2
200 TO 299	-	1-1/2	1/2	2
300 TO 399	-	2	1/2	2-1/2
400 to 499	-	2-1/2	1/2	3
500 to 599	-	3	1/2	3-1/2
600 to 699	1	2	1/2	3-1/2
700 to 799	1-1/2	2	1/2	4
800 to 899	2-1/2	1-1/2	1/2	4-1/2
900 to 999	3	1	1/2	4-1/2

7. MACHINERY AND EQUIPMENT INSULATION AND LAGGING (CONTINUED)

MACHINERY AND MISCELLANEOUS EQUIPMENT REQUIRING INSULA

MK.	DESCRIPTION	QTY.
77	FRESH WATER COOLER	1
4	MANEUVERING VALVE OR THROTTLE	1
4	H.P. TURBINE	1
62	S.S. TURBO-GEN. - TURBINE	1
55	4TH STAGE FEED WATER HEATER	1
30	MAIN FEED PUMP - TURBINE END	2
54	3RD STAGE FEED WATER HEATER	1
49	BOILER DRUMS - WATER	2
168	EMERGENCY DIESEL GEN. MUFFLER	1
79	STANDBY DIESEL GEN. MUFFLER	1
5	L.P. TURBINE	1
50	AIR PREHEATER	2
-	PREHEATER DISCHARGE TO BOILERS	2
-	BOILER UPTAKES	2
5	L.P. CROSSOVER STEAM	1
37	MN. CONDENSER VACUUM PUMPS	[illegible]
67	TANK CLEANING HEATER DRAIN COOLER	1
57	EVAP. PLANT AIR EJECTOR	2
30/31	MAIN & PORT FEED PUMP - WATER END	3
52	DEAERATOR FEED HEATER	1
—	BOILER DOWNCOMERS	6
—	ASTERN STEAM PIPING	1
142	FUEL OIL HEATERS	2
57	EVAPORATOR AFTER CONDENSER	1
56	ATMOS. DRAIN AND INSPECTION TANK	1
49	BOILER DRUMS - STEAM	2
117	FREON PUMPS	4
74	CARGO COIL HOT WATER CIRC. PUMP	2
53	1ST STAGE FEED WATER HEATER (GLAND EXHAUST COND.)	1
57	EVAPORATOR S.W. HEATER	1
67	TANK CLEANING HEATER	1
75	CARGO COIL HOT WATER HEATER	1
1	DOMESTIC WATER HEATER	1
57	EVAPORATOR - 1ST STAGE CONDENSER	1
33	HOT WATER CIRC. PUMP - WATER END	1
34	ICE WATER CIRC. PUMP - WATER END	1
61	SCUTTLEBUTT	1
99	FREON ACCUMULATOR	2
59	REFRIGERATED CARGO CONDENSERS	8
118	CARGO TANK HEATING HOT WATER EXPANSION TANK	1
—	CARGO REFRIG. OIL RECEIVER	1
—	CARGO REFRIG. MIXING EDUCTOR	4
—	CARGO REFRIG. DEHYDRATOR	2
—	CARGO REFRIG. LIQUID AND GAS SEPARATORS	4
—	CARGO REFRIG. PUMP-OUT RECEIVER	1

8. THICKNESS OF INSULATION

TABLE A

CELLULAR GLASS PIPE INSULATION

NOMINAL PIPE SIZE INCHES	DESIGN INTERNAL, OPERATING TEMPERATURE, °F		
	BELOW -20	-20 THRU 35	OVER 35
	NOMINAL THICKNESS, INCHES		
1/4 to 8	3	2-1/2	-
1/4 to 4-1/2	-	-	1-1/2
5 and over	-	-	2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-377-1

FRAME 5 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-402-4

FRAME 1 OF 5

LIST OF PIPES

PIPE No.	SIZE	SCHED	MATERIAL	ANSI	ASTM	QUANTITY REQ'D. ON M4650- 402-3	402-5	402-6	402-7	402-8	JOB No.	OPER. PRESS	INST. TEST	TOTAL REQ'D COMP. SYS.	REMARKS	REQ'N.	REQ'N.
P-1	18"	80	SEAMLESS STL.	B36.10	A53 TY.E OR S GR.B		44'-0"				402			44'-0"	SEE NOTES 128,135 REF.1	508544-E	
P-2	10"	40			A333 GR.1	65'								90'	SEE NOTES 82 & 128 REF.1	508544-B	
P-3	8"					137'	121'-0"	540						800'			508544-J
P-4	6"					61'	40'	500'						601'		508544-B	
P-5	5"							300'						300'		508544-B	508544-J 508544-F
P-6	4"					60'	220'-0"	340'						620'		508544-B	
P-7	3"					220'	85'-0"	384'						703'			508544-F
P-8	2½"					27'		50'						150'			
P-9	2"					249'	147'-0"	960'						1356'			508544-D 508544-F
P-10	1½"					7'	40'	953'		20'				1020'			508544-G
P-11	1¼"					149'	40'							200'			508544-F
P-12	1"					33'	5'	275	70'	600'				2800'			508544-N
P-13	¾"	80				71'		480	80'					640'			508544-J 508544-F
P-14	½"					75'	24'	60'	110'					280'			
P-15	¼" O.D.	.049" WALL	SEAM. COPPER TUBING SOFT TEMPER	—	B75 ALLOY 122	258'	94'							400'	SEE NOTE 133 REF.1	508545-H	
P-16	2⅛" O.D.	.083" WALL	SEAM. COPPER TUBING "TYPE K" HARD	—	B-88					20'				50'	128	-C	
P-17	16"	80	SEAMLESS STL.	B36.10	A53 TY.E OR S GR.B		22'-0"							22'-0"	SEE NOTES 128,135 REF.1	508544-B	
P-18	¼"	80			A333 GR.1	6'	4'	20'	100'					140'	SEE NOTES 82 & 128 REF.1		508544-F
P-19	⅜" O.D.	.035" WALL	SEAM. COPPER TUBE TY.K HARD	—	B-88				6'					10'	SEE NOTE 128 REF.1	508545-F	
P-20	2½	160	SMLS STEEL	B36.10	A53 TY.S GR.B	2'								2'	SEE NOTES 128, 135 REF.1	508544-F	

GENERAL NOTES

1- ALL ITEMS MARKED THUS ⬡ ON REFS. 6 THRU 10 ARE VENDOR FURNISHED AND ARE SUPPLIED WITH COMPANION FLANGES WHERE REQUIRED.

2- ~~P-3(8")ORDER 4 FUR 50'-0" LGTHS. AND P-9(2")ORDER 4 FUR 50'-0" LGTHS. AND P-12(1")ORDER 2 TWO 50'-0" LGTHS., PER SHIP FOR USE IN THE "PIPE CHASE" ONLY ON DWG. REF. 10.~~

3. "X" - DIM. BELOW DECK
"Y" - DIM. ABOVE DECK

4. VALVES, STRAINERS, AND OTHER REFRIGERATION EQUIPMENT SHOWN ON REF. NOS. 6,7,8,9, & 10 WHICH DO NOT APPEAR ON THIS DWG ARE VENDOR FURNISHED AND ARE LISTED ON REF. NOS. 11, 12

5. ALL FREON PIPING TO BE BENT WHERE POSSIBLE IN LIEU OF FITTINGS.

6. ALL FREON SCREWED CONNECTIONS TO BE BRAZED OR MADE UP WITH X-PANDO THREAD COMPOUND.

RESERVATIONS

~~1- ITEMS F-1, F-2 & F-3 ARE RESERVED PENDING INFORMATION ON STABILIZER TANK PENETRATIONS.~~

~~2- ITEMS F-29, 31, 36, 44, 47 & 65 ARE RESERVED FOR FURTHER DEV~~

~~3- RESERVED INCREASES MADE IN ALT. 1 FOR F-10, F-16, F-41; RES. CHANGE TO ECCENTRIC FOR F-41~~

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	6-24-77		1- P-1 (RES.) CHANGED FR. 10" DIA. TO 18" DIA. & QTY. INCREASED FR. 75' TO 90' REQ'D. 2- P-2 THRU P-14 CHANGED ASTM TY.E OR S, GR.B TO A-333, GR-1 3- P-2 INCREASED QTY. 75' TO 90' 4- P-8 QTY. DECREASED FR. 1150 TO 150' REQ'D. 5- P-9 QTY INCREASED FROM 40' TO 750' REQ'D. 6- P-11 QTY INCREASED FR. 50' TO 150' REQ'D. 7- ADDED P-17, 18, F-81 THRU 90, 62, 63, 64 8- F-1, F-2, F-3, F-21 CHANGED ASTM A105 TO A350, GR. LF1 9- F-4 THRU F-20, F-22 THRU F41 CHANGED ASTM A234, GR. WCB TO A420-GR WPL-6 10- F48 THRU F61 CHANGED ASTM A-105 TO A420 GR WPL-6 11- F66 THRU F80 CHANGED ASTM A234 TO A420, GR. WPL-6 12- P-5 QTY. INCREASED FR. 200' TO 225' 13- P-13 QTY. INCREASED FR. 250' TO 275' 14- F-5 QTY. INCREASED FR. 50 TO 62 15- F-16, 30, 31, 40 QTY. INCR. FR. 12 TO 24 16- F-35 QTY. INC. FR. 18 TO 24 17- F-45 QTY. INC. FR. 20 TO 24 18- F-49 QTY. INC. FR. 2 TO 7 19- F-54 QTY INC. FR. 6 TO 24 20- F-70 QTY INC. FR. 126 TO 148 21. F-72 QTY. INC. FR. 74 TO 96 22. F-78 QTY. INC. FR. 4 TO 48 23. F-29, 31, 36, 44, 47 & 65 MARKED RES. 24- F-7 DELETED (DUPLICATE F-10) 25- F35 CHANGED FROM CONC. TO ECC. 26- REVISED APPLICABLE SPECIAL NOTES (EF-529) TO SUIT ABOVE MAT'L. CHANGES WHERE NECESSARY	HU G.R.E.	
			27- F5, F6, F8, F9, F10, F12, F13, F15, F16, F20, F22, F24, F26, F28, F41, F66, F67, F69, F75 & F75 - QTY. REQ'D ADDED TO COL. 402-5 28- F8 QTY. INCREASED FM. 14 TO 48 REQ'D. 29 F10 QTY. INCREASED FM. 54 TO 76 REQ'D. 30 F16 QTY. INCREASED FM. 24 TO 26 REQ'D. 31 F21 QTY. INCREASED FM. 2 TO 4 REQ'D. 32 F22 SIZE CHG'D. FM. 10" DIA. TO 8" DIA. 33 F28 SIZE CHG'D. FM. 6"x6"x3" TO 4"x4"x2" 34 F41 DESC. CHG'D. FM. CONC. TO ECC. 35 ITEMS F91 THRU F109 ADDED. 36 REF. NOS. 4 THRU 10 ADDED. 37 P1, P3, P4, P6, P7, P9, P17 ADDED TO COL. 402-5 (P-1 REMOVED RES.) 38 P1. QTY. DECREASED FM. 90' TO 44' 39 P4. QTY. INCREASED FM. 400' TO 450' 40 P9. QTY. INCREASED FM. 750' TO 875' 41 NOTE NO. 1 AND NO. 2 ADDED. 42 P1 & P17 NOTE NO. 1 ADDED. 43 LIST OF MISC. MAT'LS. ADDED. 44. P-5, F-4, F-14, F-38, F-39, F-51 DELETED. 45. F-34 QTY. FROM 2 TO 6 & F-50 QTY. FROM 8 TO 12	HEU TGN	G.G. SHARP LTR. DATED 9-15-77
2			1- REINSTATED THE FOLLOWING: IN PIPE LIST, IT. P-5, IN FITG. LIST, ITS. F-4, F-14, F-38, F-39 & F-51; IN LIST OF MISC. MAT'LS, ADDED IT. #29. 2. REVISED QTYS AS FOLLOWS: ITEM FROM TO / ITEM FROM TO F-50 12 8 / F-39 4 2 F-34 6 2 / #28 12 8 F-38 4 2 3. IN LIST OF MISC. MATL. REV'D. I.D. HOLE SIZES OF ITS. #27, 28 & 30. ALL ABV. TO SUIT REINSTATEMENT OF 5" PIPE.	T.G.N.	G.G. SHARP LETTER DATED 11-22-77
3	12-8-77	B/m	1. ADDED THE FOLLOWING: P-19, P-20, F-110 THRU F-176, F-200 THRU F-205, F-300 THRU F-305, F-400 THRU F-405, IT. 33, 36 THRU 39.		
		B/m	2. F-28 SIZE WAS 4"X4"X2". F-33 & F-36 WERE CONC. RED. F-53 WAS WELDOLET		
		B/m	3. REVISED QTY OF: P-4 WAS 450' / F-69 WAS 6 P-7 400' / F-70 148 P-9 875' / F-71 84 P-11 150' / F-73 6 P-13 275' / F-75 12 P-14 50' / F-81 24 P-18 20' F-8 48 / F-87 6 F-9 32 / F-91 2 F-10 76 / F-92 3 F-11 12 / F-93 4 F-12 12 / F-94 4 F-16 26 / F-95 4 F-17 32 / F-96 8 F-24 4 / F-98 12 F-25 1 / F-99 2 F-35 24 / F-100 1 F-36 2 / F-101 100 F-41 3 / F-102 40 F-42 2 / F-103 65 F-45 24 / F-104 40 F-66 136 / F-105 35 F-67 6 / F-38 2 F-37 2 / F-39 2		
		1 & 3	4. ADDED GEN. NOTES 3 TO 6 AND REF. NOS. 11 & 12.		
		3	5. LIFTED ALL RESERVATIONS		
		B/m	6. DELETED ITEMS F-1 THRU F-3, F-29, F-31, F-44 & F-47		
		B/m	7. REVISED ASTM SPEC OF F-65 WAS ABS GR.A		
		B/m	8. F-21 ASTM WAS A-350 GR. LF1	WAN	G.G. SHARP LTR. DATED 2-15-78
4	3-9-78	9 9	1. ADDED ITEMS: 40 THRU 44, 46 THRU 63 2. REVISED DESCRIPTION OF IT. 23 FROM FERRULE ⅜" I.D x 1⅛" O.D x 1¾" LG TO ¾" SCH 40 PVC PIPE. 3. REVISED FITTING F-45 FROM L.R. TO S.R. AS PER Y.I.S 4650-22-86. 4. REVISED ITEMS: F-107, F-108, F-109. 5. REVISED QTY. OF ITEMS 20 FROM 750' TO 1040', 32 FROM 352 TO 542, 14 FROM 600 TO 768, 16 FROM 600 TO 768, 6 FROM 248 TO 416 6 REVISED DESCRIPTION OF IT. F-82 FROM SOCKOLET TO THREDOLET 7. REVISED QTY. OF ITEMS P-10 FROM 400 TO 1020', F-4 FROM 8 TO 32, F-5 FROM 62 TO 131, F-69 FROM 21 TO 110, F-102 FROM 148, TO 440, F-103 FROM 96 TO 420, F-104 FROM 78 TO 240, F-105 FROM 64 TO 220, F-122 2 TO 8, F-128 FROM 1 TO 30, F-169 FROM 18 TO 70, F-87 FROM 7 TO 40, F-114 FROM 7 TO 115. 8. REINSTATED F-31 9. ADDED ITEMS: F-177 THRU F-183. (THE ABOVE ALT. 6 THRU 9 AS PER YIS 4650-22-74) 10. REVISED QTY. OF ITEMS: P-3 FROM 650' TO 800' P-4 520' 580' P-5 225' 240' P-6 550' 580' P-7 460' 680' P-13 440' 640' P-14 220' 280' F-6 55 84 F-8 56 80 F-9 58 82 F-16 28 48 F-49 7 8 F-62 10 12 F-175 64 96 F-176 110 144 F-405 224 288 F-25 2 3 11. DELETED ITEMS: F-18, F-20, F-120.	L.P.K.	G.G. SHARP LTR. DATED 5-17-78
5			1. REVISED QTY. PER PIPE SHOP DRAWING CHANGE REQUESTS P7 (680-703), P9 (1080-1096), F5 (131-134), F9 (82-86), F10 (106-127), F12 (16-20), F102 (440-451), F8 (80-88), F16 (48-51), F100 (35-38), F101 (202-214), F103 (420-426), F105 (220-228), F106 (4-13), F127 (1-3), F200 (16-20), F201 (8-10). 2. QTY F16 (51-56) F-63 (24-25) 3. DELETED GEN NOTE NO. 2 4. REVISED QTY ITEM 68 (105-120) ADDED ITEMS 64, 65 & 66. 5. LENGTH OF ITEM 19 (3½-3¼) 6. ADDED F-184 PER YIS 4650-22-119 7. ADDED F185 PER YIS 4650-22-132 (CONT.)		

ALTERATION

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
5	5-29-78		8 ADDED FITTING F-186 9. REVISED QTY. OF ITEMS: P-4 FROM 580' TO 601' P-5 240' 300' P-6 580' 620' P-9 1096' 1346' F-69 110 125 F-88 2 4 F-89 4 8 F-101 214 326 F-178 80 84 MATERIAL CHANGES AS PER PIPE SHOP DCR. DATED 5-31-78	L.P.K. L.P.K.	G.G. SHARP LTR. DATED 7-21-78
6	8-31-78		1. REVISED SIZE OF: IT. 54 WAS 1½" NOW 2½" 55 1" 3" 57 1½" 2½" 58 1" 3" 2. REVISED QTY OF: IT. 53 WAS 24 NOW 28 55 28 24 56 5'-6" 6'-6" F-126 3 5 THE ABOVE ALT. WAS MADE PER YIS 4650-22-218 3. ADDED ITEMS 24, 25, 31, 34, 35, 45 & 67 THRU 76. 4. REVISED QTY OF: ITEM 21 WAS 400 FT. ITEM 23 WAS 54 FT. ITEMS 3 & 4 OF THIS REVISION WAS MADE TO COMPLY WITH YIS 4650-22-247, 252, 254 5 ON YIS 4650-22-252 & 254 ITEM 45 BOLTS WERE ORDERED 1" LG.	WAN	G.G. SHARP LTR. DATED 10-3-78
7	10-2-78		1. REVISED ITEM 62 QTY WAS 140'-0", ITEM 63 QTY WAS 120'-0" AND REVISED MATERIAL OF IT. 62 & 63 WAS ASBESTOS ROPE. PER MEMO J.W. LAWTON TO C. BENNER DATED 31 AUG. 1978 2 REVISED QTY OF: F-5 WAS 134 / F-101 WAS 326 F-9 86 / F-102 451 F-15 30 / F-103 426 ITEM 2 OF THIS REVISION PER YIS 4650-22-288. 3 ADDED ITEMS F-187 AND F-206 AS PER Y.I.S. 4650-22-300	WAN L.P.K.	G.G. SHARP LTR. DATED 11-20-78
8	11-13-78		1. REVISED QTY OF: P-11 WAS 180 FT / IT. 48 WAS 24 IT. 44 40 FT / IT. 50 54 IT. 46 24 / IT. 51 54 IT. 47 48 / IT. 52 6 FT. IT. 54 8 / IT. 58 6'-6" IT. 55 24 / IT. 59 8 IT. 57 2 FT / IT. 60 24 F-107 12 / F-109 4 2. DELETED F-131 3. ADDED F-188	WAN	G.G. SHARP LTR: 1-2-79

ALT. NO. 8 CONT.

ALTERATION

NO.	DATE	ZONE	DESCRIPTION	BY	APP'D
8			4. INCREASED QTY HULL 4651 ONLY IT. 6 WAS 416, IT. 14 WAS 768 IT. 16 WAS 768, IT. 29 WAS 116' IT. 20 WAS 1040', IT. 32 WAS 542 IT. 40 WAS 168, IT. 49 WAS 168		
9	6-7-79		1. INCREASED QTY OF: IT. 21 WAS 712' / IT. 67 WAS 672 23 124' / 68 672 24 420' / 70 100' 35 228 / 71 30' 45 384 / 73 24 & ADD ITEM № 79 PER YIS 4650-22-354 2. REVISED QTY AND MATERIAL OF PIPE P15 WAS SEAM. COPPER TUBING DRAWN TEMPER, 1600'-0" PER YIS 4650-22-422 3. ADD ITEMS 77 & 78 AND IT. 14 WAS 812, IT. 32 WAS 586 16 812, 44 67 18 176, 45 480 19 176, 46 34 20 1180, 48 34 21 782, 50 74 22 352, 51 74 23 134, 52 7 25 80, PER YIS 4650-22-499 & 517 4. ADD ITEM № 80 & F7, REV. QTY IT. F203 WAS 20, F303 WAS 20, F403 WAS 32 PER YIS 4650-22-473	WAN	7/10/79 fja
10	5-16-80		1. INCREASED QTY OF: P-9 WAS 1346'-0" F-12 20 PER YIS 4650-22-612	WAN	7/1/80 fja

UAO-50118-A

REFERENCE PLANS

NO.	PLAN NO.	TITLE
12	076-02828 E	TECH. DATA PLAN LIST & TABLES LIQ. OV'FD SYS. SH. 2
11	076-02828 E	TECH. DATA PLAN LIST & TABLES LIQ. OV'FD SYS. SH.
10	M4650-402-6	CARGO REFRIG. MACH'Y. SP. OUTSIDE MACH'Y. SPACE
9	M4650-402-8	PUMP DOWN SYSTEM
8	M4650-402-7	OIL RETURN SYSTEM
7	M4650-402-3	36'-0" LVL. & ABOVE
6	M4650-402-5	CARGO REFRIG. MACH'Y. SP. 26'-0" LVL. & BELOW
5	076-02879 E	PIPING SCHEMATIC - CARGO REFRIG. - YORK DWG.
4	EF-496	STD. SLEEVES FOR PIPES & BULKHEADS
3	EF-521	STD. PIPE SUPPORTS (FL. BAR, U-BOLT TYPES)
2	EF-358	FABRICATION & WELDING DET'S. FOR CL. II PIPING
1	EF-529	LIST OF SPECIAL NOTES FOR VENDOR FURN. MATL.

HULL	DESIGN	CHARGE
4651	27,540 D.W.T. CONTAINERSHIP	8450
4650	27,540 D.W.T. CONTAINERSHIP	8450

JOB NO. 402

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 2-3-77
DRAWN H.E.U
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. M4650-402-4
ALT. NO. 10

CARGO REFRIGERATION LIST OF MATERIALS

APPROVAL LETTERS					
HULL	4650-51				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	9-15-77				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					
MARAD					

KEY PLAN

M-768

CARGO REFRIGERATION
M4650-402-4

TTINGS

	JOB No.	CAT. OR DWG. NO.	REMARKS	402-3	402-5	402-6	402-7	402-8	REQ'N. Nº	REQ'N. Nº
BORE FOR SCH 40 3000 LB.	402	BONNEY FORGE	SEE NOTES 82,90-93 REF.1	17	2	57	23	45	508503-E	508503-Y 508503-M
				20	3					508503-M
				8		24	13			
				6	2	112		5	508503-E 508503-Y	508503-N 508503-M
				28		148	11	1	508503-E	508503-M
						96				
							2			
				5	2					508503-M
				2		2				
				2	1	24				508503-M
				4						
						48				
						24				
			NOTES 171,82,90-93 REF.1	4		24			508505-D	508505-F
						24			508505-G	
						72			508505-D	
			NOTES 82,90-93 REF.1			24			508503-E	
OVE GASKET TYPE		HENRY CAT. No. 2PTH-3/4		8		16				
BORE FOR SCH 40 3000 LB		BONNEY FORGE				48				
					1	29				508503-N 508503-M
						4				508503-V
			171,82,90-93 REF.1			8			508505-D	508505-M
			82,90-93 REF.1			2			508505-E	
	402		82,90-93	2	2				508503-K	508503-M
				1	3					508503-M 508503-Y
			82,173,90-93	5	4					508503-M
		BONNEY FORGE	82,90-93	5	4					
				5	4					
				12	8					
BORE FOR SCH 80					4					
				29	12		13			508503-M
ET I.P.S. BORE FOR SCH 40				4	2				508505-F	
E		TUBE-TURN No 96F	82,90-93	37	1				508511	508511-E 508511-A
				114	104	112			508511-J 508511-F	
				106	68	292			508511-J 508511-C	508511-A 508511-B
				47	85	324			508511-J 508511-E	
				47	31	162			508511	
				42	35	156			508511 508511-E	
ET I.P.S. BORE FOR SCH 40		BONNEY FORGE	82,171,90-93	9	4				508503-J 508505-E	
		SEE DET "3-D" ON DWG M-4650-402-6				12			UAO	
						14				
						4				
BORE FOR SCH 40 3000 LB		BONNEY FORGE	NOTES 171,82,90-93 REF.1	3					508505-F	
				2						
SCH 40		TUBE TURN PT. 90	82,90-93 REF.1	1						508502-C
FACE-150# BORE FOR SCH 40		TUBE TURN PT. 50		1					508501-D	
E		TUBE TURN PT. 96 F		7		96				508511-B 508511-A
GED F.F. 150#		LUNKENHEIMER FIG. 1402	10,66,90-93 REF.1	1					508500	
FACE		JOHNS-MANVILLE NO. 60 OR EQ.	—	2					SUPPLY	
RE FOR CH.40 3000 LB		BONNEY FORGE	171,85,90-93 REF.1	2					508505-F	
L.R		TUBE TURN NO. 5	82,90-93 REF.1	5					508502-C	
		NO. 22		2						
		NO. 20		1						
		NO. 22		2						
ORE FOR CH 40 3000 LB		BONNEY FORGE	171,82,90-93 REF.1	2		6			508505-E 508505-F	
40 L.R.		TUBE TURN NO 1-R	82,90-93 REF.1	4					508502-C	
CH. 40		NO. 90		4						
ORE FOR CH 80 3000 LB		BONNEY FORGE	171,82,90-93 REF.1	2					508505-F	
S.R.		TUBE TURN NO. 3	82,90-98 REF.1	3					508502-C	508502-K
CH. 40		NO. 90		2						508502-G
TYPE		NO. 96R		1		24			508511-B 508511-A	
ORE FOR CH 80 3000 LB		BONNEY FORGE	171,82,90-93 REF.1	8					508505-F	
BORE			82,90-93 REF.1	4					508503-M	
				~~2~~						
				4					508503-M	
				4						
				2						
R I.P.S. BORE FOR SCH 80			171,82,90-93 REF.1	6					508505-F	

LIST OF FITTINGS

ALT. No.	PTG. No.	AMT. REQ'D	SIZE	MATERIAL	ANSI	ASTM	DESCRIPTION	JOB No.	CAT. OR DWG. No.	REMARKS	QUANTITY REQ'D. ON M4650-					REQ'N. Nº	REQ'N. Nº
											402-3	402-5	402-6	402-7	402-8		
8	~~F-1~~	~~6~~	~~10"~~	~~FORGED STEEL~~	~~B16.5~~	~~A350 GR LF1~~	~~FLANGE, SLIP ON - 150 LB~~	402									
	~~F-2~~	~~4~~					~~BLIND~~			PER DET. REF							
	~~F-3~~	~~2~~								PER DET. REF							
44	F-4	32	5"	SMLS. STL.	B16.9	A420 GR WPL-6	ELBOW, 90°, B.W., SCH. 40 L.R		TUBE TURN PT. 1	NOTES 82,90-98 REF.1			32			508502-A	508502-D
27 14	F-5	140	4"	SMLS. STL.	B16.9	A420 GR WPL-6	ELBOW, 90° B.W. SCH. 40 L.R				13	19	108			508502-A 508502-N	508502-F 508502-D
	F-6	84	8"								9	11	64			508502-A	508502-G
26	F-7	2	2"													508502-T	
	F-8	83	6"								10	9	64			508502-G 508502-A	508502-C 508502-B
27	F-9	88	3"								22	18	48			508502-P 508502-N	508502-G 508502-C
27 24	F-10	127	2"								37	44	46			508502-A 508502-F	508502-G 508502-H
	F-11	26	2½"								2		24			508502-A	508502-G 508502-C
27	F-12	24	2"				45°		PT. #5		13	11	—			508502-A	508502-F 508502-C
27	F-13	16	6"									1	—				
44	F-14	8	5"										8			508502-A	
	F-15	32	4"									5	24				508502-N
27	F-16	55	3"								3	4	48			508502-A 508502-J	508502-G 508502-C
	F-17	36	8"								4		32			508502-A	508502-C
	~~F-18~~	~~4~~	~~8"×6"~~				~~REDUCING ELBOW - 90° B.W. SCH 40 L.R~~		~~PT. #1-R~~								
	F-19	4	6"×4"														
27	~~F-20~~	~~4~~	~~10"×8"~~								2	1					
27 8 31	F-21	4	3"×4"	FORGED STEEL	B16.5	A350 GR LF1 or 2	EXPANDER FLANGE - 150 LB		DESIGN A			4				508501-C	
27 9	F-22	3	8"	SMLS. ST'L.	B16.9	A420 GR WPL-6	TEE B.W. SCH. 40		PT. #20			1				508502-B	
	F-23	8	3"													508502-A	
27	F-24	6	4"								4	2					508502-C 508502-G 508502-C
	F-25	3	10"×10"×8"				REDUCING TEE B.W. SCH. 40		PT. #22		3						
27	F-26	4	8"×8"×6"								1	1					
	F-27	4	6"×6"×3"								4						
33 27	F-28	2	3"×3"×2"									2					508502-C
23	~~F-29~~	~~2~~	~~3"×3"×1¼"~~														
15	F-30	24	4"×4"×2½"										24			508502-A	
15 15	F-31	24	3"×3"×1½"										24			508502-D	
	F-32	8	10"				ELBOW - 90° B.W. SCH. 40 L.R.		PT. #1		7					508502-A	
	F-33	3	8"×10"				REDUCER ECC.		PT. #92		2					508502-C	
45	F-34	2	6"×4"				CONC.		90				6			508502-A	
15 16	F-35	28	4"×3"				ECC		PT. #92		4		24				508502-C
23	F-36	5	2"×1½"	FORGED STL	—		COUPLING S.W.		BONNEY FORGE		1		4			508503-M	
	F-37	4	8"×6"	SMLS STL	B16.9		REDUCER CONC. B.W.		TUBE TURN PT. 90				4			508502-A	508502-C
44	F-38	4	6"×5"										4			508502-A	
44	F-39	4	5"×4"										4			508502-A	
15	F-40	24	4"×2½"										24			508502-A	
34 27	F-41	4	8"×6"				ECC		PT. #92		1	3				508502-C	
	F-42	4	6"				TEE B.W. SCH. 40		PT. #20		4					508502-A	508502-C
	F-43	2	3"				CAP		PT. #80								
23	~~F-44~~	~~2~~	~~1¼"~~				180° RETURN BENDS & B.W. SCH. 40		PT. #7								
17	F-45	32	3"							NOTES 82,90-93 REF.1	8		24			508502-E	
	F-46	2	2"				L.R.									508502-A	
23	~~F-47~~	~~24~~	~~1½"~~														
10	F-48	2	6"×2"	FORGED ST'L.	—		WELDOLET RUN & OUTLET I.P.S. SCH. 40		BONNEY FORGE	NOTES 172,82,90-93 REF.1	2					508505-D	
18	F-49	8	8"×4"		—								8			508505-D	508505-J
45	F-50	8	6"×4"		—								8			508505-D	
44	F-51	4	5"×4"		—								4				
	F-52	24	4"×3"		—								24				
	F-53	24	4"×1½"		—		SOCKOLET			NOTES 171,82,90-93 REF.1			24			508505-F	
19	F-54	24	8"×4"		—		WELDOLET			NOTES 172,82,90-93 REF.1			24			508505-D	
	F-55	48	¼"×3"		—		SOCKOLET			NOTES 171,82,90-93 REF.1			24				
	F-56	21	1"×2"		—						8		4				
	F-57	15	¾"×3"		—												
	F-58	30	½"×3"		—												
	F-59	8	1"×2"		—		ELBOLET - SOCKET TYPE USE W/90° L.R. SOLID ELBOW			NOTES 173,82,90-93 REF.1							
	F-60	8	¾"×1¼"		—												
	F-61	4	½" N.P.T.×1¼"		—		THREADED TYPE SCH. 40										
7	F-62	12	2"×1"		—		SOCKOLET RUN & OUTLET I.P.S. SCH. 40			NOTES 171,82,90-93 REF.1			12			508505-D	508505-J
7	F-63	25	2½"-1¼"×¼"		—						1		24				508505-M
7	F-64	24	2½-2"×½"		—								24				
23	F-65	*24	3 15/16 Φ×½ R.	STEEL	—	A516 GR 60	CLOSURE PLATE						24			*	
	F-136	10	5-4×¼"	FORGED ST'L	—	A420 GR. WPL-6	SOCKOLET, 3000# RUN & OUTLET FOR I.P.S. SCH 80		BONNEY FORGE	NOTES 82,171,90-93 REF.1	6	4				508505-F	
	F-137	8	3½-3×¼"		—	A420 GR. WPL-6	THREDOLET			82,170,90-93 REF.1	8						
	F-138	16	¼" NOM.	CAST BRONZE	B16.18	B62	ADAPTER, SOLD. JT. C × MPT		FLAGG FIG. 3076	90-93 REF.1	16					508503-M	

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

LIST OF

ALT. No.	PIPE No.	SIZE	SCHED	MATERIAL	ANSI	ASTM	402-3	402
	P-1	18"	80	SEAMLESS STL.	B36.10	A53 TY.E OR S GR.B		44
	P-2	10"	40			A333 GR.1	65'	
41 37	P-3	8"					137'	12
37	P-4	6"					61'	4
41 13	P-5	5"						
37	P-6	4"					60'	22
37	P-7	3"					220'	8
2,4	P-8	2½"					27'	
37 2,5	P-9	2"					249'	14
2	P-10	1½"					7'	4
2,6	P-11	1¼"					149'	4
41	P-12	1"					33'	
13	P-13	¾"	80				71'	
	P-14	½"					75'	2
	P-15	1⅛ O.D.	.049 THK WALL	SEAM. COPPER TUBING SOFT TEMPER	—	B75 ALLOY 122	258'	9
	P-16	2⅛ O.D.	.083 THK WALL	SEAM. COPPER TUBING TYPE "K" HARD	—	B-88		
41 37	P-17	16"	80	SEAMLESS STL.	B36.10	A53 TY.E OR S GR.B		22
	P-18	¼"	80			A333 GR.1	6'	4
	P-19	⅝ O.D.	.035" WALL	SEAM. COPPER TUBE TY. "K" HARD	—	B-88		
	P-20	2½	160	SML STEEL	B36.10	A53 TY.E GR.B	2'	

GEN

1- ALL ITEMS MARKED THUS
AND ARE SUPPLIED WI

2- ~~P-3(8") ORDER 4 FOUR 50~~
~~P-9(2") ORDER 4 FOUR 50~~
~~P-12(1") ORDER 2 TWO 5~~
~~SHIP FOR USE IN~~
~~ON DWG. REF. 10~~

3. "X" = DIM. BELOW DECK
"Y" = DIM. ABOVE DECK

4. VALVES, STRAINERS, AND OTHE
WHICH DO NOT APPEAR ON T
NOS. 11, 12

5. ALL FREON PIPING TO

6. ALL FREON SCREWED
X-PANDO THREAD CO

RESERVATIONS

1- ~~ITEMS F-1, F-2 & F-3 ARE RESERVED PENDING INFORMATION ON STABILIZER TANK PENETRATIO~~

2- ~~ITEMS F-29, 31, 36, 44, 47 & 65 ARE RESERVED FOR FURTHER~~

3- ~~RESERVED INCREASES MADE IN ALT. 1 FOR F-10, F-16, F-41, RES. CHANGE TO ECCENTRIC FOR F-41~~

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-402-4

FRAME 2 OF 5

LIST OF MISCELLANEOUS MATERIALS

ALT. NO.	ITEM NO.	QTY. REQ'D.	DESCRIPTION	MATERIAL	ASTM	ANSI	REMARKS	REQ'N.	REQ'N.
43	1	2	CLOSURE PLATE 21"x21"x3/4" TK.	STEEL	ABS-GR.A	—	REF. 6, DET. "5-A"	UAO	*
	2	2	FLANGE PLATE 21"x21"x1 1/4" TK		ABS-GR.A	—			*
	3	8	2" NOM. PIPE SLEEVE		A53 TY "E" OR "S" GR.B	—	REF. 4, FIG. 2, REF. 10, DET. "10-A"		
	4	4	1" NOM. PIPE SLEEVE			—	REF. 4, FIG. 2		
	5	248	3/4"-10 UNC STUD x 3" LG. (1" LG. SET END 1 1/2" NUT END)		A307-GR.B	B1.1	TAP END STUD	508529	
	6	460	3/4"-10 HEAVY HEX NUT			B18.2.1/B1.1		508529 SUPPLY	
	7	2	GASKET - 20 1/4" O.D. x 1/4" TK.	COMP. ASBESTOS FIBER, COMM'L.	D1170 GR. P1161A	—	REF. 6, DET. "5-A"	508524-A	
	8	4	GASKET - 22 1/4" O.D. x 1/4" TK.			—	REF. 6, DET. "4-A"		
	9	4	CLOSURE PLATE - 23"x23"x3/4" TK.	STEEL	ABS-GR.A	—		UAO	*
	10	4	FLANGE PLATE - 23"x23"x1 1/4" TK.			—			*
	11	20	GASKET - 14 1/8" O.D. x 1/4" THK.	COMP. ASBESTOS FIBER COMM'L.	D1170 GR. P1161A	—	REF. 10, DET. "11-B"	508524-A	
	12	2	STUD RING - 44"x21 1/2"x1 1/4" THK.	STEEL	ABS GR. AH-36 SEMI-KILLED	—	DET. "10-A"	UAO	*
	13	2	CLOSURE PLATE - 44"x21 1/2"x3/4" THK.		ABS-GR.A	—			*
	14	1016	WASHER - 2" O.D. x 13/16" I.D. x 1/8" THK.	STL.-GALV.		—		SUPPLY	
	15	2	GASKET - 44"x21 1/2"x1/4" THK.	COMP. ASBESTOS FIBER, COMM'L.	D1170 GR. P1161A	—	REF. 10, DET. "10-A"	508524-A	
	16	936	WASHER - 2" O.D. x 3/16" I.D. x 1/8" THK			—		508524-F 508524-A	508524-C 508524-K
	17	204	FERRULE - 7/8" I.D. x 1 1/8" O.D. x 3/4" LONG			—		508524-A	
	18	210	PHENOLIC BLOCK 12"x4"x1" THK	PHENOLIC	COMM'L.	—	REF. 10, DET. "12-B" (RYERTEX GRADE C)	500198-F	500198-S
	19	256	BOLT, HEX. HD., 3/4" DIA x 3 1/4" LG, 10 UNC-2, W/NUT	STEEL GALV.	A307-GR.B	B18.2.1/B1.1		SUPPLY	
	20	1500 FT	FLAT BAR, 3/8"x2"		ABS GR.A	—	REF. 10, DET. "12-B", "13-C", "13-B", "8-A"	UAO	*
	21	1180 FT	SHEET METAL, 14 GA., 6" WIDE		A569	—			*
	22	432 FT	FLAT BAR, 3/8"x4"		ABS-GR. AH-36 SEMI-KILLED	—			*
	23	150 FT	3/4" SCH 40 PVC PIPE	PVC	COMM'L	—	TYPE II HI IMPACT	508546	508546-C 508546-D
	24	280 FT	3/8"x2" FLAT BAR	STEEL	ABS GR.A	—		UAO	*
	25	160 FT	1/4"x2" FLAT BAR			—		UAO	*
	26	20	STUD RING - 14 1/2" O.D. x 1 1/4" THK.	STEEL	ABS GR. AH-36 SEMI-KILLED	—	REF. 10, DET. "11-B"	UAO	*
	27	4	CLOSURE PLATE - 14 1/2" O.D. x 3/4" THK. (8 3/4" I.D. HOLE)		ABS-GR.A	—	FOR 8" PIPE		*
	28	8	(6 5/8")			—	6"		*
	29	4	(5 5/8")			—	5"		*
	30	4	CLOSURE PLATE - 14 1/2" O.D. x 3/4" THK. (4 1/2" I.D. HOLE)	STEEL	ABS-GR.A	—	REF. 10, DET. "11-B" FOR 4" PIPE		*
	31	21 FT	3/8"x3" FLAT BAR					UAO	*
	32	666	BOLT, HEX. HD., 5/8" DIA x 2" LONG, 11 UNC-2, W/NUT	STEEL, GALV.	A307 GR.B	B18.2.1/B1.1		SUPPLY	
	33	8	3 1/4" LG.					SUPPLY	
	34	200 FT	3/8"x1 1/2" FLAT BAR	STEEL	ABS GR.A			UAO	*
	35	384	5/8" HEX. HD. BOLT 3 1/2" LG. 10-UNC-2 W/NUT	ST'L GALV.	A-307 GR.B	B18.2.1/B1.1		UAO	
	36	1	DOUBLER PL. 1/2" THK x 12"x13"	STEEL	ABS GR.A		DET. "9-A" REF. #7	UAO	*
	37	4	FLAT BAR 1/2"x3"x6'-0" LG						*
	38	1	COAMING 17.87# PL. x 3" WIDE x 4'-5 5/8" LG				CUT FROM 7/16" FLAT BAR SECT. "7-D" REF. 10		*
	39	2	x 4'-4 1/16" LG						*
	40	212	CPL PITCH DIAMETER BASE STUDS 3/4"x2 1/4" UNC-2A/10	STEEL	COMM'L	B1.1	NELSON STUD WELDINING CO. PT. NO. 101-017-377	508529-B	508529-C
	41	48	BOLT HEX. HD. 1/2" DIA x 2 1/2" LONG 13 UNC-2 W/NUT	STEEL GALV.	A-307 GR.B	B18.2/B1.1		Supply	
	42	40 FT	FLAT BAR 3/8"x4 3/4"	STEEL	ABS GR.A	—	Ref 10 - Det "14-B"	UAO	*
	43	12	PHENOLIC BLOCK 1 1/2"x4"x9 1/2" (SEE DET 14-B M-4650-402-6)	PHENOLIC	COMM'L		(RYERTEX GRADE C)	500198-H	
	44	80 FT	FLAT BAR 1/4"x1 1/2"	STEEL	ABS GR.A	—	Ref 10 - Det "14-C"	UAO	*
	45	536	1/2" HEX. HD. BOLT 1 1/2" LG 13-UNC-2 W/NUT	ST'L GALV.	A-307 GR.B	B18.2.1/B1.1		Supply	
	46	38	PHENOLIC BLOCK 3/8"x1 1/2"x2"	PHENOLIC	COMM'L		(RYERTEX GRADE C)	500198-H	500198-S 500198-K
	47	68	BOLT HEX HD 1/2" DIA x 1" LONG 13-UNC-2 W/NUT	STEEL	A-307 GR.B			Supply	
	48	38	3/8" 1 3/4" 16"						
	49	212	PHENOLIC BLOCK 1" THK x 2"W x 3"L	PHENOLIC	COMM'L		(RYERTEX GRADE C)	500198-H	500198-K
	50	82	WASHER 1 3/8" O.D. x 9/16" I.D. x 1/8" THK	STEEL	ABS GR.A		Use 3/8" STD From →	SUPPLY	
	51	82		COMP. ASBESTOS FIBER COMM'L	D1170 GR. P116A			508524-K 508524-C	508524-F
	52	8 FT	3/8" SCH 40 PVC PIPE	PVC	COMM'L		TYPE II HI IMPACT	508546 –	A, B, C & D
	53	28	2" 150# SCREWED PIPE CAP	MALL. IRON	A-197		FLAGG FLOW FIG. #1045	Supply	SUPPLY
	54	16	2 1/2"					508503-AB	508503-Z
	55	16	3"						
	56	6'-6"	2" SCH 40 PIPE	STEEL	A-53 TY E OR S GR.B			508544-K	508544-K-D
	57	4'-0"	2 1/2"						508544-S
	58	4'-6"	3"						
	59	16	1/4" CELLULAR H300 PVC SHEET (PACKING GLAND FOR 2" PIPE SEE DET 3-D M-4650-402-6)	PVC			480□" (1 SHT. 20"x24" CUTS ITEMS 59, 60, 61 & 66)	508524-C	
	60	16	(PACKING GLAND FOR 1 1/2" PIPE SEE DET. 3-D M-4650-402-6)						
	61	28	(PACKING GLAND FOR 1" PIPE SEE DET 3-D M-4650-402-6)						
	62	300'-0"	1/4" ROPE PACKING	FIBERFRAX ROPE			CARBORUNDUM CO.		
	63	130'-0"	3/8"						
	64	6"	2 1/2" SCH 80 PIPE	STEEL	A53 TY E OR S GR.B			Pipe Shop	
	65	2	2 1/2" 150# SCREWED PIPE CAP	MALL. IRON	A-197	B16.11	FLAGG FLOW FIG. #1045 SEE NOTES 90-93 REF. 1	508503-V	
	66	2	1/4" CELLULAR H300 PVC SHEET PACKING GLAND FOR 1 1/4" PIPE - DET 2A REF NO. 7	PVC	-		CUT FROM ITEM 59	—	
	67	864	WASHER 1 3/8" O.D. x 7/8" I.D. x 1/8" THK	ST'L GALV.	ABS GR.A	—		UAO	
	68	864		COMP. ASBEST. FIBER COMM'L	D1170 GR. P116A				
	69	48	3/4" HEX. HD. BOLT 3" LG. 10-UNC-2 W/NUT	ST'L GALV.	A307 GR.B	B18.2.1/B1.1			
	70	150 FT	2"x2"x3/8" ANGLE	STEEL	ABS GR.A				*

LIST OF FITTINGS

ALT. No.	FTG. No.	AMT REQD	SIZE	MATERIAL	ANSI	ASTM	DESCRIPTION	JOB No.	CAT. OR DWG. NO.	REMARKS	QUANTITY REQ'D. ON M4650- 402-3	402-5	402-6	402-7	402-8	REQ'N. No	REQ'N. No
27	F-66	144	1"	FORGED STEEL	B16.11	A420 GR. WPL-6	ELBOW 90° SOCKET WELD BORE FOR SCH. 40 3000 LB.	402	BONNEY FORGE	SEE NOTES 82, 90-93 REF. 1	17	2	57	23	45	508503-E	508503-Y 508503-M
27	F-67	23	1 1/4"								20	3					508503-M
	F-68	96	1/4"								8		24	13			
27	F-69	125	1 1/2"								6	2	112		5	508503-E 508503-Y 508503-Y	508503-N 508503-M
20	F-70	188	3/4"								28		148	11	1	508503-E	508503-M
	F-71	96	1"				45°						96				
21	F-72	96	3/4"				TEE							2			
27	F-73	7	1 1/4"								5	2					508503-M
	F-74	120	1"								2		2				
27	F-75	27	1 1/2"								2	1	24				508503-M
	F-76	24	1"				CROSS										
	F-77	6	1"				CAP										
22	F-78	48	1 1/4"x1"				REDUCER INSERT				4						
	F-79	56	1"x3/4"										48				
7	F-80	64	1/4"				COUPLING						24				
7	F-81	28	3 1/2-3x1		—		SOCKOLET RUN & OUTLET, I.P.S. SCH. 40			NOTES 171, 82, 90-93 REF. 1	4		24			508505-D	508505-F
7	F-82	24	8-3x1/2		—		THREDOLET						24			508505-G	
7	F-83	72	1-3/4x1/4		—		SOCKOLET						72			508505-D	
7	F-84	24	3/4"		B16.11		COUPLING BORE FOR SCH. 80			NOTES 82, 90-93 REF. 1			24			508503-E	
7	F-85	24	3/4"				UNION, STEEL NUT, TONGUE & GROOVE, GASKET TYPE		HENRY CAT. No. 2PTU-3/4		8		16				
7	F-86	48	1 1/2"				ELBOW 45° SOCKET WELD BORE FOR SCH. 40 3000 LB		BONNEY FORGE				48				
24	F-87	40	1 1/2"				COUPLING					1	29				508503-N 508503-M
7	F-88	4	1 1/2"x1"				REDUCER						4				508503-V
7	F-89	8	1 1/2"x1"		—		SOCKOLET			171, 82, 90-93 REF. 1			8			508505-D	508505-M
7	F-90	2	1 1/2"		B16.11		ELBOW 45°			82, 90-93 REF. 1			2			508503-E	
35	F-91	4	1 1/2"x1 1/4"	FORGED STEEL			REDUCER INSERT	402		82, 90-93	2	2				508503-K	508503-M
35	F-92	4	1 1/4				COUPLING				1	3					508503-M 508503-Y
35	F-93	9	1"		—		UNION - THREADED			82, 178, 90-93	5	4					508503-M
35	F-94	9	1"		B16.11		ELBOW 90° THREADED		BONNEY FORGE	82, 90-93	5	4					
35	F-95	9	1 1/4"				TEE - THREADED				5	4					
35	F-96	20	1 1/4"x1"				HEX BUSHING THREADED				12	8					
35	F-97	4	1/2"				COUPLING SOCKET WELD BORE FOR SCH. 80					4					
35	F-98	54	1/2"				ELBOW 90°				29	12		13			508503-M
35	F-99	6	10-6x1"		—		SOCKOLET - RUN & OUTLET I.P.S. BORE FOR SCH. 40				4	2				508505-F	
35	F-100	38	10"		—		WELDING RING - FLAT TYPE		TUBE-TURN No. 96F	82, 90-93	37	1				508511	508511-E 508511-A
35	F-101	330	2"		—						114	104	112			508511-J 508511-B	
35	F-102	466	3"		—						106	68	292			508511-J 508511 508511-C	508511-A 508511-B
35	F-103	456	4"		—						47	85	324			508511-J 508511 508511-E	
35	F-104	240	6"		—						47	31	162			508511	
35	F-105	233	8"		—						42	35	156			508511 508511-E	
35	F-106	13	3 1/2"-3"x1"		—	A420 GR. WPL-6	SOCKOLET - RUN & OUTLET I.P.S. BORE FOR SCH. 40		BONNEY FORGE	82/171, 90-93	9	4				508505-J 508506-E	
35	F-107	8	2"	STEEL	—		BHD. PENETRATION FITTING		SEE DET. "5-D" ON DWG M-4650-402-6				12			UAO	
35	F-108	14	1"		—								14				
35	F-109	8	1 1/2"		—								4				
	F-110	3	2"x1	FORGED ST'L	—	A420 GR. WPL-6	SOCKOLET RUN & OUTLET I.P.S. BORE FOR SCH. 40 3000 LB		BONNEY FORGE	NOTES 171, 82, 90-93 REF. 1	3					508505-F	
	F-111	2	2 1/2"x1 1/4"		—						2						
	F-112	1	2 1/2"x2"		B16.9	A-420 GR. WPL-6	REDUCER CONC. B.W. SCH-40		TUBE TURN PT. 90	82, 90-93 REF. 1	1						508502-C
	F-113	1	2 1/2"		B16.5	A-105	WELD-NECK FLANGE F.&D., FLAT FACE-150# BORE FOR SCH. 160		TUBE TURN PT. 30		1					508501-D	
	F-114	115	2 1/2"	STEEL	—	A333 GR.1	WELDING RING - FLAT TYPE		TUBE TURN PT. 96 F		7		96				508511-B 508511-A
	F-115	1	2 1/2"	BRONZE		B61	SWING-CHECK VALVE - FLANGED, F.&D. 150#		LUNKENHEIMER FIG. 1402	10, 68, 90-93 REF. 1	1					508500	
	F-116	2	2 1/2"	ASBESTOS	B16.21	D1170 GR. P1161A	GASKET 1/8" THK 150# FULL FACE		JOHNS-MANVILLE NO. 60 OR EQ.	—	2					SUPPLY	
	F-117	2	5-4x1 1/4	FORGED ST'L	—	A-420 GR. WPL-6	SOCKOLET I.P.S. RUN & OUTLET BORE FOR SCH. 40 3000 LB.		BONNEY FORGE	171, 82, 90-93 REF. 1	2					508505-F	
	F-118	5	10"	SMLS. STEEL	B16.9	A-420 GR. WPL-6	45° ELBOW B.W. SCH. 40 L.R.		TUBE TURN NO. 5	82, 90-93 REF. 1	5					508502-C	
	F-119	2	3"x3"x2"				RED. TEE B.W. SCH. 40		NO. 22		2						
	~~F-120~~	~~1~~	~~10"~~				~~TEE B.W. SCH. 40~~		~~NO. 20~~		~~1~~						
	F-121	2	10"x10"x6"				RED. TEE B.W. SCH. 40		NO. 22		2						
	F-122	8	5-4x1"	FORGED ST'L	—		SOCKOLET I.P.S. RUN & OUTLET BORE FOR SCH. 40 3000 LB		BONNEY FORGE	171, 82, 90-93 REF. 1	2		6			508505-G 508505-F	
	F-123	4	4"x3"	SMLS STEEL	B16.9	A-420 GR. WPL-6	RED. ELBOW 90° B.W. SCH. 40 L.R.		TUBE TURN NO. 1-R	82, 90-93 REF. 1	4					508502-C	
	F-124	4	6"x3"				CONCENTRIC RED. B.W. SCH. 40		NO. 90		4						
	F-125	2	12-6x3/4"	FORGED ST'L	—		SOCKOLET I.P.S. RUN & OUTLET BORE FOR SCH. 80 3000 LB		BONNEY FORGE	171, 82, 90-93 REF. 1	2					508505-F	
	F-126	5	10"	SMLS STEEL	B16.28	A420 GR. WPL-6	90° ELBOW B.W. SCH. 40 S.R.		TUBE TURN NO. 3	82, 90-93 REF. 1	3					508502-C	508502-K
	F-127	3	10"x8"		B16.9		CONCENTRIC RED. B.W. SCH. 40		NO. 90		2						508502-G
	F-128	30	1 1/2"	STEEL	—	A-333 GR.1	WELDING RING - RIDGE TYPE		NO. 96R		1		24			508511-B 508511-A	
	F-129	8	2 1/2-2x3/4	FORGED ST'L	—	A-420 GR. WPL-6	SOCKOLET I.P.S. RUN & OUTLET BORE FOR SCH. 80 3000 LB		BONNEY FORGE	171, 82, 90-93 REF. 1	8					508505-F	
	F-130	4	3/4"		B16.11	A420 GR. WPL-6	45° ELBOW S.W. SCH. 80 BORE			82, 90-93 REF. 1	4					508503-M	
	F-131	~~2~~	~~1 1/2x1/2~~				~~REDUCER INSERT S.W.~~ SCH. 80 BORE				~~2~~						
	F-132	4	2"				TEE S.W. SCH. 40				4					508503-M	
	F-133	4	2"x1"				REDUCER INSERT S.W.				4						
	F-134	2	2"x1 1/4"								2						
	F-135	6	5-4x1/2"		—		SOCKOLET RUN & OUTLET FOR I.P.S. BORE FOR SCH. 80			171, 82, 90-93 REF. 1	6					508505-F	

VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-402-4

FRAME 3 OF 5

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-402-4

FRAME 4 OF 5

ALT. NO.	FTG NO.	AMT REQ'D	SIZE	MATERIAL	ANSI	ASTM	DESCRIPTION	JOB NO	CAT. OR DWG. NO.	REMARKS	QUANTITY REQD ON M4650 402-3	402-5	402-6	402-7	402-8	REQ'N NO.	REQ'N NO.
△3	F-139	1	2⅛O.D.X1⅝O.D	WROT COPPER	B16.22	B75	RED. COUPLING C X C SOLD. JT.	402	MUELLER #W1073	NOTES 158,90-93 REF.1					1	508503-M	
	F-140	1	2⅛O.D.X1½"				FLUSH BUSHING FTG X FPT		#A 7819						1		
	F-141	2	⅞O.D.X1"				ADAPTER C X FPT SOLD. JT.		#W 1245						2		
	F-142	2	1⅜O.D.X1½"						#W 1270						2		
	F-143	2	1½"	FORGE ST'L	B16.11	A 420 GR WPL-6	TEE S.W. 3000# BORE FOR SCH. 40		BONNEY FORGE	82,90-93 REF.1					2	508503-M	
	F-144	38	1"											10	28		
	F-145	1	1½"X1"X1½"				RED. TEE								1	508503-M	
	F-146	1	1½"X¾"X1½"												1		
	F-147	3	2⅛O.D.	WROT COPPER	B16.22	B75	90° ELBOW C X C SOLD. JT.		MUELLER #W2086	158,90-93 REF.1					3	508503-M	
	F-148	8	2"X1¼"	SEAMLESS ST'L	B16.9	A 420 GR WPL-6	CONCENTRIC REDUCER		TUBE TURN PT.90	82,90-93 REF.1	8					508502-C	
	F-149	8	3"X1¼								8						
	F-150	8	1"X¾"	FORGED ST'L	B16.11		COUPLING S.W. 3000# BORE FOR SCH 80		BONNEY FORGE		8					508503-M	
	F-151	8	1"		—		UNION, SCRD. 3000#			NOTES 82,175,90-93	8						
	F-152	2	1¼"		—						2						
	F-153	2	1"X1"X¼"		B16.11		RED. TEE S.W. 3000# BORE FOR SCH. 80		BONNEY FORGE	NOTES 82,90-93 REF.1				2		508503-M	
	F-154	2	1"X1"X¾"											2			
	F-155	2	¾"X¾"X¼"											2			
	F-156	2	¾"X¾"X½"											2			
	F-157	3	¾"X¼"X¼"											3			
	F-158	3	¾"X½"X½"											3			
	F-159	6	⅜O.D.X¼"	WROT COPPER	B16.22	B75	ADAPTER C X FPT		MUELLER #W1215	158,90-93 REF.1				6		508503-M	
	F-160	8	¼" NOM	CAST BRONZE	—	B62	UNION C X C SOLD JT.		FLAGG FIG. 3094	90-93 REF.1	8						
	F-161	32	¼"X⅛"		B16.18		FLUSH BUSHING FTG X C		3080		32						
	F-162	2	½"X¼"	FORGED ST'L	B16.11	A-420 GR WPL-6	RED. BUSHING THREADED		BONNEY FORGE	82,90-93 REF.1	2					508503-M	
	F-163	2	1½X1¼"		B16.11		REDUCER INSERT S.W 3000#		BONNEY FORGE		2					508503-M	
	F-164	4	1¼"				COUPLING THREADED				4						
	F-165	16	1"								8	8					
	F-166	2	¾"								2						
	F-167	8	½"								4	4					
	F-168	4	1¼"		B16.11		45° ELBOW S.W. BORE FOR SCH. 40		BONNEY FORGE		4					508503-M	
△4 △3	F-169	70	1"				COUPLING S.W.							50	20	508503-M 508503-N	
	F-170	48	2⅜OD X 2½	CAST BRONZE	B16.18	B62	ADAPTER C X MPT SOLD JT.		FLAGG FIG. 3076	158,90-93 REF.1				48		508503-M	
	F-171	48	⅞OD.X¾"											48			
	F-172	48	2½"	FORGED ST'L	B16.5	A-420 GR WPL-6	THR'D FLG F.&D. 150#		TUBE TURN PT. 60	82,90-93 REF.1				48		508501-D	
	F-173	72	2½"				WELD NECK FLG. BORE FOR SCH. 40 F.&D.150# (FOR USE WITH F-172)		PT. 30	NOTES 82,90-93 REF.1				72			
	F-174	48	¾"				THRD FLG 150# F.&D.		PT.60				48				
△4	F-175	96	¾"				SOCKET WELD FLG.-BORE FOR SCH. 80 150# F.&D.		PT.150				96			508501-M/E	
	F-176	144	¾"	FLEXITALLIC		TYPE-304	GASKET ⅛"THK 150# SPIRAL WOUND W/STN STL OUTER RING		FLEXITALLIC STYLE "CG"	WITH AFRICAN BLUE FILLER			144			508524-C 508524-B	
△5 △3	F-200	20	10"	FORGED ST'L	B16.5	A420 GR WPL-6	FLANGE WELDING NECK F.&D.150# BORE FOR SCH.40	402	TUBE TURN PT. 30	NOTES 82,90-93 REF.1	12	8				508501-D,E	
△5	F-201	10	6"								6	4					
	F-202	32	4"								16	16					
△9	F-203	24	2"								10	10					(8)508501-K
	F-204	8	3"						PT 30		4	4					
△3	F-205	1	2½"		B16.5	A105	FLANGE WELDING NECK F&D 150# BORE FOR SCH-40	402	TUBE TURN PT# 30	90-93	1						
△3	F-300	16	10"	FLEXITALLIC		TYPE 304	GASKET ⅛"THK 150#	402	FLEXITALLIC STYLE "CG"	WITH AFRICAN BLUE FILLER	8	8				508524-B	
	F-301	8	6"								4	4					
	F-302	32	4"								16	16					
△9	F-303	24	2"								10	10					(8)508524-J
	F-304	8	3"								4	4					
	F-305	120	2½"										120				
△3	F-400	96	—	STEEL	B1.1/B18.22	STUDS A320 GR L43 NUTS A-194 GR 4	⅞" DIA STUD W/2 NUTS AMER. STD. HVY WASHER FACED. 4¾" LG	402			48	48				508529-A	
	F-401	32	—				¾" 4" LG				16	16					
	F-402	32	—				⅝" 3¾" LG				16	16					
△9	F-403	48	—				⅝" 3¼" LG				16	16					(32)508529-D
	F-404	192	—				⅝" 3½" LG						192				
△4	F-405	288	—				½" 2½" LG						288				508529-B
△5	F-177	24	3"	SMLS STEEL	B16.28	A-420 GR WPL-6	90° ELBOW B.W. SCH 40 S.R.		TUBE TURN PT.#3				24			508502-D	
△5	F-178	84	5"	FORGED STEEL	—		WELDING RING - FLAT TYPE		#96F				84			508511-B	508511-F
	F-179	24	4"x¾"				THREDOLET RUN & OUTLET 3000#		BONNEY FORGE				24			508505-G	
	F-180	24	¾"		B16.11		COUPLING THREADED 3000#						24			508503-N	
	F-181	24	½"				PIPE PLUG THREADED SQ. HD.						24			508503-N	
	F-182	24	5"-3"x¾"				THREDOLET RUN & OUTLET 3000#									508505-G	
	F-183	24	¾"				PIPE PLUG THREADED SQ. HD.									508503-N	
△5	F-184	18	1¼"	STEEL	—	A-420 GR. WPL-6	WELDING RING	402	TUBE TURN PT#96R		18					508511-D	
△5	F-185	4	4"x6"	FORGED STEEL	—	A-105	EXPANDER FLANGE	402	TUBE TURN DESIGN C		4					508501-F	
△5	F-186	4	8"x1"		—	A-105	THREDOLET RUN & OUTLET 3000#		BONNEY FORGED			4				508505-M	
△7	F-206	2	3"	FORGED STEEL	B16.5	A-105	FLANGE SLIP-ON		TUBE TURN PT #50			2				508501-G	
△9	F-187	2	4"x3"		B16.9	A-420 GR.WPL-6	SCH40 CONC. REDUCER B.W.		#90			2				508502-P	
△8	F-188	1	1¼"	STEEL	—	—	BHD PENETRATION FITTING		SEE DET "2A" ON DWG M4650-402-3		1					UAO	

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LIST OF MISCELLANEOUS MA

ALT. NO.	ITEM NO.	QTY. REQ'D	DESCRIPTION	MATERIAL	ASTM	AN
△1	1	2	CLOSURE PLATE 21"X21"X¾"TK.	STEEL	ABS-GR.A	—
	2	2	FLANGE PLATE 21"X21"X1¼"TK		ABS-GR.A	—
	3	8	2" NOM. PIPE SLEEVE		ABS TY. "E" OR "S" GR. B	—
	4	4	1" NOM. PIPE SLEEVE			—
	5	248	¾"-10 UNC STUD X 3" LG.(1" LG. SET END 1½" NUT END)		A307-GR.B	B1.1
△6 △5	6	460	¾"-10 HEAVY HEX NUT			B18.2
	7	2	GASKET-20⅛" O.D X ⅛" TK.	COMP. ASBESTOS FIBER COMM'L	D1170 GR. P1161A	—
	8	4	GASKET - 22¼" O.D. X ⅛" TK.			—
	9	4	CLOSURE PLATE - 23"X23" X ¾" TK.	STEEL	ABS-GR.A	—
	10	4	FLANGE PLATE - 23"X23" X 1¼" TK.			—
	11	20	GASKET - 14½" O.D. X ¼" THK.	COMP. ASBESTOS FIBER COMM'L	D1170 GR. P1161A	—
	12	2	STUD RING - 44"X21½"X1¼" THK.	STEEL	ABS GR.AH-36 SEMI-KILLED	—
	13	2	CLOSURE PLATE - 44"X21½"X¾" THK.		ABS-GR.A	—
△9 △6 △5	14	1016	WASHER-2"O.D.X13/16" I.D. X ⅛" THK	STL.-GALV.		—
	15	2	GASKET - 44"X21½"X¼" THK.	COMP. ASBESTOS FIBER, COMM'L	D1170 GR. P1161A	—
△9 △6 △5	16	936	WASHER - 2"O.D.X13/16" I.D. X ⅛" THK			—
	17	204	FERRULE - ⅞" I.D.X1⅛" O.D.X¾" LONG			—
△9	18	210	PHENOLIC BLOCK 12"X4"X1" THK	PHENOLIC	COMM'L	—
△9 △6	19	256	BOLT, HEX. HD., ¾" DIA.X3¼" LG, 10 UNC-2, W/NUT	STEEL GALV	A307-GR.B	B18.2.1/
△9 △6 △5	20	1500FT	FLAT BAR, ⅜"X2"		ABS GR.A	—
△9 △6	21	1180FT	SHEET METAL, 14 GA., 6" WIDE		A569	—
△9	22	432FT	FLAT BAR, ⅜"X4"		ABS-GR AH-36 SEMI-KILLED	—
△9 △6 △6 △5	23	150FT	¾" SCH 40 PVC PIPE	PVC	COMM'L	—
△9 △6	24	260FT	⅜"X2" FLAT BAR	STEEL	ABS GR.A	—
△9	25	160FT.	¼"X2" FLAT BAR			—
△4	26	20	STUD RING - 14½" O.D X 1¼" THK.	STEEL	ABS GR.AH-36 SEMI-KILLED	—
△5	27	4	CLOSURE PLATE - 14½" O.D. X ¾" THK. (8¾" I.D. HOLE)		ABS-GR.A	—
△5	28	8	(6¾")			—
△5	29	4	(5⅝")			—
△4 △5	30	4	CLOSURE PLATE - 14½" O.D X ¾" THK. (4⅝" I.D. HOLE)	STEEL	ABS-GR.A	—
△6	31	21 FT.	⅜"X3" FLAT BAR			—
△9 △4 △5 △4	32	666	BOLT, HEX. HD., ⅝" DIA. X 2" LONG, 11 UNC-2, W/NUT	STEEL, GALV	A307 GR.B	B18.2.1/B
△3	33	8	3¼" LG.			
△6	34	200FT.	⅜"X1½" FLAT BAR	STEEL	ABS GR.A	
△9	35	384	¾" HEX. HD. BOLT 3½" LG. 10-UNC-2 W/NUT	ST'L GALV.	A-307 GR.B	B18.2.1/B
△3	36	1	DOUBLER PL ½THK X 12" X 13"	STEEL	ABS GR.A	
	37	4	FLAT BAR ½"X3"X6'-0" LG			
	38	1	COAMING 17.87# PL X 3" WIDE X 4'-5⅝" LG			
	39	2	X 4'-4⅛" LG			
△4 △6	40	212	CPL PITCH DIAMETER BASE STUDS ¾ X 2¼" UNC-2A/10	STEEL	COMM'L	B1.1
△5	41	48	BOLT HEX. HD. ½" DIA X 2½" LONG 13UNC-2 W/NUT	STEEL GALV.	A-307 GR.B	B18.2/B1.1
	42	40FT.	FLAT BAR ⅜"x4¾"	STEEL	ABS GR.A	—
	43	12	PHENOLIC BLOCK 1½"x4"x9½" (SEE DET.14-B M-4650-402-6)	PHENOLIC	COMM'L	
△9 △8	44	80FT	FLAT BAR ¼"x1½"	STEEL	ABS GR.A	—
△9 △6	45	536	½" HEX. HD. BOLT 1½" LG 13-UNC-2 W/NUT	ST'L GALV.	A-307 GR.B	B18.2.1/B
△9 △4 △8	46	38	PHENOLIC BLOCK ⅜"x1½"x2"	PHENOLIC	COMM'L	
	47	68	BOLT HEX. HD. ½" DIA. x 1" LONG 13-UNC-2 W/NUT	STEEL	A-307 GR.B	
△9	48	38	⅜" 1¾" 16-			
△6	49	212	PHENOLIC BLOCK 1" THK x 2"W x 3"L	PHENOLIC	COMM'L	
△9 △4 △8	50	82	WASHER 1⅛" O.D x 7/16" I.D. x ⅛" THK.	STEEL	ABS GR.A	
△9	51	82		COMP. ASBESTOS FIBER COMM'L	D1170 GR. P1161A	
△9	52	8FT	⅜" SCH 40 PVC PIPE	PVC	COMM'L	
△6	53	28	2" 150# SCREWED PIPE CAP	MALL. IRON	A-197	
△8	54	16	2½"			
	55	16	3"			
△8	56	6'-6"	2" SCH.40 PIPE	STEEL	A-53 TYPE E OR S GR.B	
	57	4'-0"	2½"			
	58	4'-6"	3"			
	59	16	¼" CELLULAR H300 PVC SHEET (PACKING GLAND FOR 2" PIPE SEE DET.3-D M-4650-402-6)	PVC		
	60	16	(PACKING GLAND FOR 1½" PIPE SEE DET.3-D M-4650-402-6)			
	61	28	(PACKING GLAND FOR 1" PIPE SEE DET.3-D M-4650-402-6)			
△7	62	300'-0"	¼" ROPE PACKING	FIBERFRAX ROPE		
△5	63	230'-0"	⅜"			
	64	6"	2½" SCH 80 PIPE	STEEL	A53 TY. E OR S GR.B	
	65	2	2½" 150# SCREWED PIPE CAP	MALL. IRON	A-197	B16.11
	66	2	¼" CELLULAR H300 PVC SHEET PACKING GLAND FOR 1¼" PIPE - DET 2A REF NO. 7	PVC	-	
△9 △6	67	864	WASHER 1⅜" O.D.X⅞" I.D.X⅛" THK	ST'L GALV.	ABS GR.A	—
	68	864		COMP. ASBEST FIBER COMM'L	D1170 GR. P1161A	
	69	48	¾" HEX. HD. BOLT 3" LG. 10-UNC-2 W/NUT	ST'L GALV.	A-307 GR.B	B18.2.1/B1.1
△9	70	150FT	2"X2"X⅜" ANGLE	STEEL	ABS GR.A	

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AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-402-4

FRAME 5 OF 5

ALT. NO.	ITEM NO.	QTY REQ'D	DESCRIPTION	MATERIAL	ASTM	ANSI	REMARKS	REQ'N.	REQ'N.
	71	80 FT	2½"X2½"X⅜" ANGLE	STEEL	ABS GR.A			UAO	*
	72	24	PHENOLIC BLOCK 1"X2"X4½"	PHENOLIC	COMM'L				
	73	72	1"X2½"X6"						
	74	48	1"X3"X6"						
	75	50 FT	3½"X3½"X⅜" ANGLE	STEEL	ABS GR.A				*
	76	45 FT	1½" SCH 40 PIPE		A-53 TY.E OR S GR.B	B36.10			
	77	22	¾" DIA HEX HD BOLT 2¼" LG 10-UNC-2 WITH HEX NUT	GALV. STL.	A307 GR B	B18.2.1/B1.1		SUPPLY	
	78	22	PHENOLIC BLOCK 2"×2"×⅜" THICK	PHENOLIC			RYERTEX GRADE C OR EQ.	500198-S	
	79	1	17"×24"×⅜" PLATE	STEEL	ABS GR A		TO CUT 48 2⅛"×2⅛" CHOCKS		*
	80	2	2" BALL VALVE 150# FLG F&D	CAST STL.	A216 GR WCB		MARPAC FIG. C5470-12TF , NOTES 90-93 EF529	508500-C	

ALT NO.	FTG NO.	AMT REQ'D	SIZE	MATERIAL	ANSI	ASTM	DESCRIPTION	JOB NO	CAT. OR DWG. NO.	REMARKS	QUANTITY REQD ON M4650					REQ'N NO.	REQ'N NO.
											402-3	402-5	402-6	402-7	402-8		
△3	F-139	1	2⅛O.D.X1⅝O.D.	WROT COPPER	B16.22	B75	RED. COUPLING C X C SOLD. JT.	402	MUELLER #W1073	NOTES 158,90-93 REF.1					1	508503-M	
	F-140	1	2⅛O.D.X1½"				FLUSH BUSHING FTG X FPT		#A 7819						1		
	F-141	2	⅞"O.D.X1"				ADAPTER C X FPT SOLD. JT.		#W 1245						2		
	F-142	2	1⅜"O.D.X1½"						#W 1270						2		
	F-143	2	1½"	FORGE ST'L	B16.11	A420 GR WPL-6	TEE S.W. 3000# BORE FOR SCH.40		BONNEY FORGE	82,90-93 REF.1					2	508503-M	
	F-144	38	1"											10	28		
	F-145	1	1½"X1"X1½"				RED. TEE								1	508503-M	
	F-146	1	1½"X¾"X1½"												1		
	F-147	3	2⅛O.D.	WROT COPPER	B16.22	B75	90° ELBOW C X C SOLD. JT.		MUELLER #W2086	158,90-93 REF.1					3	508503-M	
	F-148	8	2"X1¼"	SEAMLESS ST'L	B16.9	A420 GR WPL-6	CONCENTRIC REDUCER		TUBE TURN PT.90	82,90-93 REF.1	8					508502-C	
	F-149	8	3"X1¼								8						
	F-150	8	1"X¾"	FORGED ST'L	B16.11		COUPLING S.W. 3000# BORE FOR SCH 80		BONNEY FORGE		8					508503-M	
	F-151	8	1"		—		UNION, SCRD. 3000#			NOTES 82,175 90-93	8						
	F-152	2	1¼"		—						2						
	F-153	2	1"X1"X¼"		B16.11		RED. TEE S.W. 3000# BORE FOR SCH.80		BONNEY FORGE	NOTES 82,90-93 REF.1				2		508503-M	
	F-154	2	1"X1"X¾"											2			
	F-155	2	¾"X¾"X¼"											2			
	F-156	2	¾"X¾"X½"											2			
	F-157	3	¾"X¼"X¼"											3			
	F-158	3	¾"X½"X½"											3			
	F-159	6	⅜"O.D.X¼"	WROT COPPER	B16.22	B75	ADAPTER C X FPT		MUELLER #W1215	158,90-93 REF.1				6		508503-M	
	F-160	8	¼" NOM.	CAST BRONZE	—	B62	UNION C X C SOLD JT.		FLAGG FIG. 3094	90-93 REF.1	8						
	F-161	32	¼"X⅛"		B16.18		FLUSH BUSHING FTG X C		3080		32						
	F-162	2	½"X¼"	FORGED ST'L	B16.11	A420 GR WPL-6	RED. BUSHING THREADED		BONNEY FORGE	82,90-93 REF.1	2					508503-M	
	F-163	2	1½"X1¼"		B16.11		REDUCER INSERT S.W. 3000#		BONNEY FORGE		2					508503-M	
	F-164	4	1¼"				COUPLING THREADED				4						
	F-165	16	1"								8	8					
	F-166	2	¾"								2						
	F-167	8	½"								4	4					
	F-168	4	1¼"		B16.11		45° ELBOW S.W. BORE FOR SCH.40		BONNEY FORGE		4					508503-M	
△4 △3	F-169	70	1"				COUPLING S.W.							50	20	508503-M 508503-N	
	F-170	48	2⅝OD X 2½	CAST BRONZE	B16.18	B62	ADAPTER C X MPT SOLD JT.		FLAGG FIG. 3076	158,90-93 REF.1				48		508503-M	
	F-171	48	⅞"OD.X¾"											48			
	F-172	48	2½"	FORGED ST'L	B16.5	A420 GR WPL-6	THR'D FLG F.&D. 150#		TUBE TURN PT. 60	82,90-93 REF.1				48		508501-D	
	F-173	72	2½"				WELD NECK FLG. BORE FOR SCH. 40 F.&D.150# (FOR USE WITH F-172)		PT. 30	NOTES 82,90-93 REF.1				72			
	F-174	48	¾"				THRD FLG 150# F.&D.		PT.60				48				
△4	F-175	96	¾"				SOCKET WELD FLG.- BORE FOR SCH. 80 150# F.&D.		PT.150				96			508501-D&E	
	F-176	144	¾"	FLEXITALLIC		TYPE-304	GASKET ⅛" THK 150# SPIRAL WOUND W/STN STL OUTER RING		FLEXITALLIC STYLE "CG"	WITH AFRICAN BLUE FILLER			144			508524-C 508524-B	
△5 △3	F-200	20	10"	FORGED ST'L	B16.5	A420 GR WPL-6	FLANGE WELDING NECK F.&D.150# BORE FOR SCH.40	402	TUBE TURN PT. 30	NOTES 82,90-93 REF.1	12	8				508501-D,E	
△5	F-201	10	6"								6	4					
	F-202	32	4"								16	16					
△9	F-203	24	2"								10	10					(8)508501-K
	F-204	8	3"						PT 30		4	4					
△3	F-205	1	2½"		B16.5	A105	FLANGE WELDING NECK F&D 150# BORE FOR SCH-40	402	TUBE TURN PT # 30	90-93	1						
△3	F-300	16	10"	FLEXITALLIC		TYPE-304	GASKET ⅛" THK 150#	402	FLEXITALLIC STYLE "CG"	WITH AFRICAN BLUE FILLER	8	8				508524-B	
	F-301	8	6"								4	4					
	F-302	32	4"								16	16					
△9	F-303	24	2"								10	10					(8)508524-J
	F-304	8	3"								4	4					
	F-305	120	2½"										120				
△3	F-400	96	—	STEEL	B18/B18.22	STUDS A320 GR L43 NUTS A-194 GR 4	⅞" DIA STUD W/ 2 NUTS AMER. STD. HVY WASHER FACED. 4¾" LG	402			48	48				508529-A	
	F-401	32	—				¾" 4" LG				16	16					
	F-402	32	—				⅝" 3¾" LG				16	16					
△9	F-403	48	—				⅝" 3¼" LG				16	16					(3)508529-D
	F-404	192	—				⅝" 3½" LG						192				
△6	F-405	288	—				½" 2½" LG						288				508529-B
△8	F-177	24	3"	SMLS STEEL	B16.28	A-420 GR WPL-6	90° ELBOW B.W. SCH 40 S.R.		TUBE TURN PT. #3				24			508502-D	
△8	F-178	84	5"	FORGED STEEL	—		WELDING RING - FLAT TYPE		#96F				84			508511-B	508511-F
	F-179	24	4"x¾"				THREDOLET RUN & OUTLET 3000#		BONNEY FORGE				24			508505-G	
	F-180	24	¾"		B16.11		COUPLING THREADED 3000#						24			508503-N	
	F-181	24	½"				PIPE PLUG THREADED SQ. HD.						24			508503-N	
	F-182	24	5"-3"x¾"				THREDOLET RUN & OUTLET 3000#									508505-G	
	F-183	24	¾"				PIPE PLUG THREADED SQ. HD.									508503-N	
△5	F-184	18	1¼"	STEEL	—	A-420 GR WPL-6	WELDING RING	402	TUBE TURN PT #96R		18					508511-D	
△5	F-185	4	4"×6"	FORGED STEEL	—	A-105	EXPANDER FLANGE	402	TUBE TURN DESIGN C		4					508501-F	
△	F-186	4	8"x1"		—	A-105	THREDOLET RUN & OUTLET 3000#		BONNEY FORGED			4				508505-M	
△1	F-206	2	3"	FORGED STEEL.	B16.5	A-105	FLANGE SLIP-ON		TUBE TURN PT. #50			2				508501-G	
△1	F-187	2	4"x3"		B16.9	A-420 GR WPL-6	SCH40 CONC. REDUCER B.W.		#90			2				508502-P	
△8	F-188	1	1¼"	STEEL	—	—	BHD PENETRATION FITTING		SEE DET "2A" ON DWG M4650-402-3		1					UAO	

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14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-111-20-10

FRAME 1 OF 2

PIPING MATERIAL SCHEDULE

COMM SPECS	REMARKS	JOINTS SIZE	JOINTS MATERIAL	JOINTS TYPE	JOINTS FLG STD	JOINTS BOLTS	JOINTS NUTS	JOINTS GASKETS	JOINTS REMARKS	VALVES SIZE	VALVES MATERIAL BODY	VALVES MATERIAL TRIM	VALVES END CONN'S & PRESS. STD	VALVES REMARKS	FITTINGS SIZE	FITTINGS MATERIAL	FITTINGS END CONN'S & PRESS. STD	FITTINGS REMARKS
STM-335 GRADE 11	SEE NOTE NO. 4	OVER 2½" NPS 2½" NPS 2" NPS & BELOW	FORGED OR ROLLED ALLOY STEEL 1¼ CR - ½ MO ASTM A182 GR F11	WELDING NECK FLANGE SOCKET WELDING FLANGE	ANSI B16.5 900# ANSI B16.5 1500#	ASTM A193 GRADE B16 (STUD-BOLTS)	ASTM A194 GRADE 3	SPIRAL WOUND 347SS & ASBESTOS		OVER 2½" NPS 2½" NPS & BELOW	CAST OR FORGED ALLOY STEEL 1-¼ CR-½ MO ASTM-A217 GRADE WC-6 OR ASTM-A182 GRADE F11	SS WITH STELLITE SEATS & DISCS	FLANGED ANSI B16.5 ANSI B16.10 900# FLANGED ANSI B16.5 ANSI B16.10 1500#	SEE NOTE NOS. 8 & 13	OVER 2" N.P.S. 2" NPS & BELOW	WROUGHT ALLOY STEEL 1-¼ CR-½ MO ASTM A234 GRADE WP11 (SEE NOTE #6)	BUTT WELD ASA B16.9 SCH 120 (SEE REMARKS) SOCKET WELD ASA B16.11 SCH 80 3000#	2½" & 3" NPS TO BE SCH 80 AS PER NOTE 4
STM-106 GRADE B	SCH 80	OVER 2" NPS 2" NPS & BELOW	FORGED OR ROLLED STEEL ASTM-A105	WELDING NECK FLANGE SOCKET WELDING FLANGE	ASA B16.5 600#	ASTM A193 GRADE B7	ASTM A194 GRADE 1	SPIRAL WOUND 304 SS & ASBESTOS	SEE NOTE NO. 14	ALL SIZES	CAST OR FORGED STEEL ASTM A-216 GRADE WCB OR ASTM A-105	SS WITH STELLITE SEATS & DISCS	FLANGED ANSI B16.5 ANSI B16.10 600#	SEE NOTE NOS. 9, 13 & 14	OVER 2" NPS 2" NPS & BELOW	WROUGHT STEEL ASTM A234 GRADE WPB (SEE NOTE #6)	BUTT WELD ASA B16.9 SCH 80 SOCKET WELD ASA B16.11 SCH. 80-3000#	

GENERAL NOTES

1. ALL WELDING SHALL BE IN ACCORDANCE WITH ABS & USCG RULES.
2. PIPING SHALL BE ARRANGED TO PROVIDE CLEAR HEADROOM OF AT LEAST 7'0" IN WALKWAYS, WORKAREAS, ACCOMMODATIONS & NAVIGATION SPACES.
3. THE RADIUS OF THE CENTERLINE OF BENDS FOR ALL PIPE AND TUBE SHALL BE NOT LESS THAN 5 TIMES THE NOMINAL DIAMETER.
4. FOR PIPING 3" AND BELOW USE SCHEDULE 80 PIPE. ABOVE 3" USE SCHEDULE 120 PIPE.
5. SUPERHEATER OUTLET HIGH TEMPERATURE ALARM SHALL BE SET TO OPERATE WHEN THE TEMP. RISES TO 910°F.
6. FITTINGS CONFORMING TO ASTM A-234 USED WITH ALLOY STEEL PIPE OR ASTM A-106 CARBON STEEL PIPE SHALL BE MANUFACTURED FROM SILICON KILLED STEEL.
7. SUPERHEATED STEAM LINES FROM BOILERS TO H.P. TURBINE SHALL SLOPE DOWN TOWARD TURBINE.
8. VALVES REFERRED TO THIS NOTE IN MATERIAL SCHEDULE SHALL BE AS FOLLOWS:

3" & ABOVE - 900# FLANGED

GLOBE	EDWARD FIG 4016	OR EQUAL
ANGLE	4017	↓
GLOBE STOP CHECK	4006	↓
ANGLE STOP CHECK	4007	↓

2½" & BELOW - 1500# FLANGED

GLOBE	EDWARD FIG 1028	OR EQUAL
ANGLE	1029	↓
GLOBE STOP CHECK	1046	↓
ANGLE STOP CHECK	1047	↓

9. VALVES REFERRED TO THIS NOTE IN MATERIAL SCHEDULE SHALL BE AS FOLLOWS:

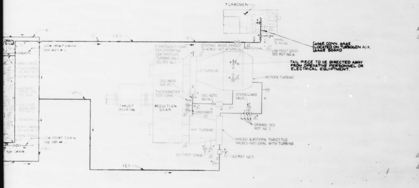
2½" & ABOVE - 600# FLANGED

GLOBE	EDWARD FIG 618	OR EQUAL
ANGLE	619	↓

2" & BELOW 600# FLANGED

GLOBE	EDWARD FIG 828	OR EQUAL
ANGLE	829	↓

10. SYSTEM SHALL BE INSULATED IN ACCORDANCE WITH REF. 6.
11. TRANSDUCER SET TO OVERIDE NORMAL SIGNALS TO THE AIR PILOTS & OPENS DUMP & MAKE-UP VALVE UPON EXCESS BOILER DRUM PRESSURE.
12. SUPERHEATER OUTLET HIGH PRESSURE ALARM SHALL BE SET TO ALARM WHEN THE PRESS. RISES TO 935 PSIG.
13. STEAM STOP VALVES 8" AND LARGER TO BE FITTED WITH BYPASSES SIZED IN ACCORDANCE WITH MSS-SP-45 AND INTEGRALLY PIPED TO VALVE BODY. ALL CHECK VALVES TO BE FITTED WITH CHECK VALVE BYPASSES AND GLOBE, ANGLE OR GATE VALVES TO BE FITTED WITH GLOBE OR ANGLE VALVE BYPASSES.
14. DRUM VENT AND GAUGE PIPING AND WATERWALL DRAIN PIPING TO BE FITTED WITH 1500LB. FLANGES IN ACCORDANCE WITH ANSI B16.5 AND 1500 LB. FLANGED VALVES IN ACCORDANCE WITH ANSI B16.10.
15. DUTCHMAN TO BE REPLACED BY BLANK FLANGE FOR ISOLATION OF H.P. OR L.P. TURBINE DURING EMERGENCY OPERATION.
16. BLANK FLANGE TO BE REPLACED BY DUTCHMAN FOR H.P. TURBINE EXHAUST DURING EMERGENCY OPERATION.
17. FLASH CHAMBERS TO BE STRAPPED IN CONTACT WITH SUPERHEATED STEAM PIPING FROM PORT AND STARBOARD BOILERS. CHAMBER TO BE FABRICATED FROM 2½" SCH. 80 PIPE AND FITTINGS.


TURBOGEN
GAGE CONN. GAGE LOCATED ON TURBOGEN AUX. GAGE BOARD
DRAIN TO BILGE
LOW POINT DRAIN SEE REF. NO. 6
SENTINEL VALVE-EXHAUST TO ATMOS.-SET AT 5 P.S.I.G.
TAIL PIECE TO BE DIRECTED AWAY FROM OPERATIVE PERSONNEL OR ELECTRICAL EQUIPMENT.
4" EMERGENCY CONN. FOR OPERATING LOW PRESSURE TURBINE ONLY SEE REF. NO. 1
L.P. TURBINE
ASTERN TURBINE
SEE NOTE NO. 15
THERMOMETER TEST CONN.
SEE NOTE NO. 16
ASTERN GUARD VALVE
12"
THRUST BEARING
REDUCTION GEAR
CROSSOVER 20"
DRAINS-SEE REF. NO. 5
H.P. TURBINE
AHEAD & ASTERN THROTTLE VALVES-INTEGRAL WITH TURBINE
ON FIRST STAGE
1"-SEE REF NO. 5
LOW POINT DRAIN SEE REF. # 6
10"
5"
("C")
3/4 DRAIN
DRAIN TO BILGE
FLASH CHAMBER SEE NOTE NO. 17
SEE NOTE NO. 12
LOW POINT DRAIN SEE REF. NO. 6
LOW POINT DRAIN-SEE REF. NO. 2
SEE NOTE NO. 12

LEGEND OF SYMBOLS

- GLOBE VALVE
- GLOBE MOTOR OPER. FROM CONSOLE
- CONTROL VALVE W/ POSITIONER - AIR TO CLOSE
- SAFETY VALVE
- PRESSURE GAGE
- REMOTE TEMP IND. ON CONTROL CONSOLE
- THERMOMETER
- REMOTE PRESS. IND. ON CONTROL CONSOLE
- STEAM STRAINER
- STOP CHECK VALVE
- BLANK FLANGE
- GOVERNOR VALVE HYDRAULICALLY CONTROLLED
- STEAM FLOW NOZZLE
- THERMO TEST WELL
- TRANSDUCER
- VENDOR FURN. EQUIP.
- REDUCER
- GATE VALVE
- AIR REGULATOR
- FLANGE W/DUTCHMAN
- EXPANSION JOINT, METAL BELLOWS TYPE
- FLANGE WITH BLANK

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	5/11/77	4-D	1. REVISED DESIGN TEMPERATURES PER LATEST VENDOR INFORMATION.		
		4-D	2. REVISED SUPERHEATER SAFETY VALVE SETTING & HYDROTEST PER LATEST VENDOR INFORMATION.		
		4-D	3. REVISED MAXIMUM POWER SUPERHEATER OUTLET & DRUM PRESSURES PER LATEST HEAT BALANCES.		
		4-C	4. REMOVED RESERVATIONS FROM VELOCITY TABLE (DES. DEV.).		
		4-C	5. REVISED VELOCITY TABLE REMARKS TO INDICATE DATA FOR PIPES "A", "B" & "C" AT 28,500 SHP ONLY (DES. DEV.).		
		4-A & 4-C	6. ADDED SYMBOLS "G", "H" & "I" TO VELOCITY TABLE (DES. DEV.).		
		4-A, 4-B, 2-B	7. REVISED SIZE OF SUPERHEATER TEMPERATURE CONTROL VALVE, ADDED VALVE POSITIONER AND CONTROL PIPING, ALTERED CONTROL VALVE SYMBOL AND ADDED AIR REGULATOR SYMBOL (DES. DEV.).		
		4-A	8. DELETED ARROW DENOTING REDUCER IN DESUPERHEATER INLET LINE AS 4" PER GGS, INC. LETTER DATED 11/3/76.		
		4-A, 5-B	9. ADDED LOW POINT DRAINS ON 8" STEAM MAINS AND 5" GENERATOR TURBINE SUPPLY LINE (DES. DEV.).		
		5-B	10. ADDED BOILER DRUM PRESSURE SENSING CONN. IN DETAIL "A" (DES. DEV.).		
		3-B	11. ADDED GENERATOR TURBINE INLET SIZE PER GGS, INC. LETTER DATED 11/3/76.		
		2-A	12. ADDED REF. NO. 7.		
		3-A	13. DELETED GLAND SEAL STEAM REMOTE PRESSURE GAUGE. INFORMATION LOCATED ON DWG. NO. 4650-111-20-31.	M.G.	J.R.D.
2	1/23/78	4-D	1. ADDED DESIGN PRESSURE & TEMPERATURE FOR SUPERHEATED STEAM MAINS.		
		4-C	2. REVISED SUPERHEATED STEAM HIGH TEMPERATURE ALARM SETTING PER LATEST VENDOR INFORMATION.		
		3-A	3. ADDED H.P. TURBINE REMOTE TEMPERATURE INDICATOR PER LATEST VENDOR INFORMATION.		
		3-B	4. ADDED L.P. TURBINE EXHAUST REMOTE TEMPERATURE INDICATOR PER LATEST VENDOR INFO.		
		3-B	5. RELOCATED L.P. TURBINE EMERGENCY STEAM INLET (DES. DEV.)		
		3-A	6. REDREW MAIN ENGINE PIPING TO SHOW PROVISIONS FOR EMERGENCY OPERATION. ADDED EXPANSION JOINTS (DES. DEV.).		
		3-A	7. DELETED CROSSOVER EXTRACTION CONNECTION INFORMATION LOCATED ON DWG. NO. 4650-111-20-15.		
		3-A	8. ADDED BELOW-SEAT DRAIN ON ASTERN GUARD VALVE (DES. DEV.).		
		2-A	9. ADDED SYMBOLS FOR FLANGE WITH DUTCHMAN, FLANGE WITH BLANK AND EXPANSION JOINT.		
		1-A	10. DELETED REF. NO. 2		
		2-C	11. ADDED NOTE NOS. 15 & 16	M.G.	J.R.D.
3	6/1/78	3-C	1. REVISED SUPERHEATED STEAM HIGH PRESSURE ALARM SETTING (DES. DEV.).		
		4-A	2. DELETED THERMOSTATIC BULB FROM SUPERHEATER OUTLET PIPING (DES. DEV.).		
		4-A	3. RELOCATED SUPERHEATED STEAM REMOTE TEMPERATURE INDICATOR CLOSER TO SUPERHEATER OUTLET CONNS. (DES. DEV.).		
		4-A & 4-B	4. ADDED FLASH CHAMBERS AND RELOCATED SUPERHEATED STEAM LOCAL & REMOTE PRESSURE INDICATORS TO FLASH CHAMBERS (DES. DEV.).		
		2-C	5. ADDED NOTE NO. 17.		
		2-B	6. DELETED THERMOSTATIC BULB SYMBOL FROM SYMBOL LIST.	M.G.	J.R.D.

	DATE OF ISSUE			
ALTERATION	0	1	2	3
ENGINEERING DISTRIBUTION	9-29-76	11-22-77	1-23-78	6-1-78
MAIL: OWNERS	2	2	2	2
AMERICAN BUREAU	3	3	3	3
LLOYD'S R.S.	-	-	-	-
U.S.M.A.	2	2	2	2
U.S. NAVY	-	-	-	-
U.S.C.G.	3	3	3	3
JOINER CONT'R.	-	-	-	-
GEORGE G. SHARP	2	2	2	2
INSPECTION: OWNER'S INSP.	1	1	1	1
AM. BU. INSP.	-	-	-	-
LLOYD'S INSP.	-	-	-	-
U.S.M.A. INSP.	1	1	1	1
U.S. NAVY INSP.	-	-	-	-
U.S.C.G. INSP.	-	-	-	-
OFFICE: HULL DRAFT. - 21	-	-	-	-
MACH. DRAFT. - 22	5	5	5	5
ELEC. DRAFT. - 23	1	1	1	1
OUTFIT DRAFT. - 25	-	-	-	-
ESTIMATING	-	-	-	-
CTD SYSTEMS	4	4	6	6
MISC.: PRODUCTION (BCO)	-	-	-	-
ORDER DEPT.	-	-	-	-
JOINER CONT. YARD	-	-	-	-
PLANNING - 10	2	2	2	2
TOTAL ENG'R. DIST.	24	24	26	26
YARD DISTRIBUTION				
YARD: CPM				
PIECE RATE - 11				
TEST DEPARTMENT				
STRUC. PLANNING				
STRUCTURAL: GROUND ASSEMBLY				
NO. WAY				
NO. WAY				
NO. WAY				
NO. WAY				
STRUCT. SUPER.				
OPTICAL DETAIL - 40				
WET DOCK				
MACH'Y & OUTFIT: PIPE SHOP - 52	1	1	1	1
OUTFIT. #1 PIER				
PIPE DRAFT - 52				
BOILER SHOP - 58				
OUTSIDE MACH. - 90				
ELECTRIC SHOP - 70				
SHEET MET. SHOP - 74				
COPPER SHOP - 51				
PAINT SHOP - 75				
WELDING				
OTHER: MOLD LOFT - 41				
BRACKET SHOP				
J.L. JOYCE - 02	1	1	1	1
GUARANTEE - 10	1	1	1	1
TOTAL YARD DIST.	3	3	3	3

HULL	DESIGN	CHARGE
4651		8450
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE — DATE 8-20-76
DRAWN — APPROVED
TRACED — APPROVED
CHECKED — APPROVED

PLAN NO. 4650-111-20-10 — ALT. NO. 3

PIPING DIAGRAM OF
MAIN STEAM SYSTEM

APPROVAL LETTERS

APPROVED BY	ALT. 0 DATE	ALT. 1 DATE	ALT. 2 DATE	ALT. 3 DATE	DATE
OWNERS	11-8-76	1-23-78	2-17-78	7-11-78	
A.B.S.	11-4-76	3-6-78	3-6-78	8-15-78	
U.S.C.G.	12-8-76	3-10-78	3-10-78	9-5-78	
LLOYD'S R.S.	╳				
U.S.P.H.S.	╳				
MARAD					

NO.	PLAN NO.	TITLE
7	4650-111-20-72	COMPRESSED AIR SYSTEM
6	4650-111-20-19	STEAM AND F.W. DRAIN COLLECTING SYSTEM
5	4650-111-20-30	PROPULSION TURBINE DRAINS SYSTEM
4	4650-111-20-26	COMBUSTION, FEEDWATER AND STEAM TEMP. CONTROL SYS.
3	4650-111-20-17	SAFETY/RELIEF VALVE ESCAPE PIPING & BOILER BLOWOFF SYS.
1	4650-111-20-11	AUXILIARY STEAM SYSTEMS

REFERENCE PLANS

M-798

4650-111-20-10

PIPING MATERIAL SCHEDULE

DESCRIPTION				PIPE				JOINTS								VALVES					FITTINGS			
SYSTEM	PRESSURE (PSIG)	TEMP °F	HYDRO TEST (PSIG)	SIZE	MATERIAL	COMM SPECS	REMARKS	SIZE	MATERIAL	TYPE	FLD STD	BOLTS	NUTS	GASKETS	REMARKS	SIZE	MATERIAL BODY	MATERIAL TRIM	END CONN'S & PRESS STD	REMARKS	SIZE	MATERIAL	END CONN'S & PRESS. STD	REMARKS
SUPERHEATED STEAM MAIN STEAM LINES DRAINS AND GAGE PIPING PIPING FROM SUPERHEATER TO CONTROL DESUPERHEATER CONTROL DESUPERHEATER RETURN TO SUPERHEATER	DESIGN - 945 ⚠ OPERATING - 872 AT 28,500 SHP ⚠ SUPERHEATER S.V. SET @ 1080 (SPRING) 1065 (PILOT) ⚠	DESIGN - 970 OPERATING ⚠ 955 CONTROLLED AT 28,500 SHP 940 ⚠ 720 ⚠	1½ x S.V. SETTING = 1620 ⚠	ALL	SMLS ALLOY STEEL 1-¼ CR-½ MO	ASTM-A-335 GRADE P11	SEE NOTE NO. 4	OVER 2½" NPS 2½" NPS 2" NPS & BELOW	FORGED OR ROLLED ALLOY STEEL 1¼ CR - ½ MO ASTM A182 GR F11	WELDING NECK FLANGE SOCKET WELDING FLANGE	ANSI B16.5 900# ANSI B16.5 1500#	ASTM A193 GRADE B16 (STUD-BOLTS)	ASTM A194 GRADE 3	SPIRAL WOUND 347SS & ASBESTOS		OVER 2½" NPS 2½" NPS & BELOW	CAST OR FORGED ALLOY STEEL 1-¼ CR-½ MO ASTM-A217 GRADE WC-6 OR ASTM-A182 GRADE F11	SS WITH STELLITE SEATS & DISCS	FLANGED ANSI B16.5 ANSI B16.10 900# FLANGED ANSI B16.5 ANSI B16.10 1500#	SEE NOTE NOS. 8 & 13	OVER 2" N.P.S. 2" NPS & BELOW	WROUGHT ALLOY STEEL 1-¼ CR-½ MO ASTM A234 GRADE WP11 (SEE NOTE #6)	BUTT WELD ASA B16.9 SCH 120 (SEE REMARKS) SOCKET WELD ASA B16.11 SCH 80 3000#	2½" & 3" NPS TO BE SCH 80 AS PER NOTE 4
SATURATED STEAM FROM DRUM TO SUPERHEATER DRUM VENT & TEST PIPING WATER WALL DRAINS	MAX CONT @ 28,500 SHP = 1005 ⚠ DRUM S.V. SET @ 1100	MAX CONT @ 28,500 SHP = 540	1½ x S.V. SETTING = 1650	ALL	SMLS. CARBON STEEL - SI KILLED	ASTM-A106 GRADE B	SCH 80	OVER 2" NPS 2" NPS & BELOW	FORGED OR ROLLED STEEL ASTM-A105	WELDING NECK FLANGE SOCKET WELDING FLANGE	ASA B16.5 600#	ASTM A193 GRADE B7	ASTM A194 GRADE 1	SPIRAL WOUND 304 SS & ASBESTOS	SEE NOTE NO. 14	ALL SIZES	CAST OR FORGED STEEL ASTM A-216 GRADE WCB OR ASTM A-105	SS WITH STELLITE SEATS & DISCS	FLANGED ANSI B16.5 ANSI B16.10 600#	SEE NOTE NOS. 9, 13 & 14	OVER 2" NPS 2" NPS & BELOW	WROUGHT STEEL ASTM A234 GRADE WPB (SEE NOTE #6)	BUTT WELD ASA B16.9 SCH 80 SOCKET WELD ASA B16.11 SCH. 80-3000#	

VELOCITY TABLE

SYMBOL	SIZES"	FLOW LBS/HR ⚠	VEL FT/MIN ⚠	ΔP/100' PSI ⚠	REMARKS
"a"	8"	97,308	5233	1.976	28,500 SHP ⚠
"b"	8"	92,580	4979	1.816	↓
"c"	10"	185,159	6265	2.143	↓
"d"	5"	9250	1251	0.241	2000 KW
"e"	5"	18,500	2502	0.884	↓
"f"	4"	25,000	5288	4.674	MAX. FLOW
"g"	5"	40,000	4860	3.351	↓
"h"	5"	40,000	4058	2.745	↓
"i"	8"	113,000	4638	3.708	20% OVERLOAD

GENERAL NOTES

1. ALL WELDING SHALL BE IN ACCORDANCE WITH ABS & USCG RULES.
2. PIPING SHALL BE ARRANGED TO PROVIDE CLEAR HEADROOM OF AT LEAST 7'-0" IN WALKWAYS WORKAREAS, ACCOMMODATIONS & NAVIGATION SPACES.
3. THE RADIUS OF THE CENTERLINE OF BENDS FOR ALL PIPE AND TUBE SHALL BE NOT LESS THAN 5 TIMES THE NOMINAL DIAMETER.
4. FOR PIPING 3" AND BELOW USE SCHEDULE 80 PIPE ABOVE 3" USE SCHEDULE 120 PIPE.
5. SUPERHEATER OUTLET HIGH TEMPERATURE ALARM SHALL BE SET TO OPERATE WHEN THE TEMP RISES TO 970°F ⚠
6. FITTINGS CONFORMING TO ASTM A-234 (USED WITH ALLOY STEEL PIPE OR ASTM A-106 CARBON STEEL PIPE SHALL BE MANUFACTURED FROM SILICON KILLED STEEL
7. SUPERHEATED STEAM LINES FROM BOILERS TO H.P. TURBINE SHALL SLOPE DOWN TOWARD TURBINE.
8. VALVES REFERRED TO THIS NOTE IN MATERIAL SCHEDULE SHALL BE AS FOLLOWS:

3" & ABOVE - 900# FLANGED

GLOBE	EDWARD FIG. 4016	OR EQUAL
ANGLE	4017	↓
GLOBE STOP CHECK	4006	↓
ANGLE STOP CHECK	4007	↓

2½" & BELOW - 1500# FLANGED

GLOBE	EDWARD FIG 1028	OR EQUAL
ANGLE	1029	↓
GLOBE STOP CHECK	1046	↓
ANGLE STOP CHECK	1047	↓

9. VALVES REFERRED TO THIS NOTE IN MATERIAL SCHEDULE SHALL BE AS FOLLOWS:

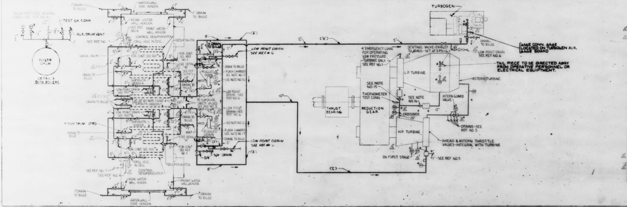
2½" & ABOVE - 600# FLANGED

GLOBE	EDWARD FIG 618	OR EQUAL
ANGLE	619	↓

2" & BELOW - 600# FLANGED

GLOBE	EDWARD FIG 828	OR EQUAL
ANGLE	829	↓

10. SYSTEM SHALL BE INSULATED IN ACCORDANCE WITH REF. 6.
11. TRANSDUCER SET TO OVERIDE NORMAL SIGNALS TO THE AIR PILOTS & OPENS DUMP & MAKE-UP VALVE UPON EXCESS BOILER DRUM PRESSURE.
12. SUPERHEATER OUTLET HIGH PRESSURE ALARM SHALL BE SET TO ALARM WHEN THE PRESS. RISES TO 935 PSIG. ⚠
13. STEAM STOP VALVES 8" AND LARGER TO BE FITTED WITH BYPASSES SIZED IN ACCORDANCE WITH MSS-SP-45 AND INTEGRALLY PIPED TO VALVE BODY. ALL CHECK VALVES TO BE FITTED WITH CHECK VALVE BYPASSES AND GLOBE, ANGLE OR GATE VALVES TO BE FITTED WITH GLOBE OR ANGLE VALVE BYPASSES.
14. DRUM VENT AND GAUGE PIPING AND WATERWALL DRAIN PIPING TO BE FITTED WITH 1500LB. FLANGES IN ACCORDANCE WITH ANSI B16.5 AND 1500 LB. FLANGED VALVES IN ACCORDANCE WITH ANSI B16.10
15. DUTCHMAN TO BE REPLACED BY BLANK FLANGE FOR ISOLATION OF H.P. OR L.P. TURBINE DURING EMERGENCY OPERATION. ⚠
16. BLANK FLANGE TO BE REPLACED BY DUTCHMAN FOR H.P. TURBINE EXHAUST DURING EMERGENCY OPERATION
17. FLASH CHAMBERS TO BE STRAPPED IN CONTACT WITH SUPERHEATED STEAM PIPING FROM PORT AND STARBOARD BOILERS. CHAMBER TO BE FABRICATED FROM 2½" SCH. 80 PIPE AND FITTINGS. ⚠


1" DRAIN TO BILGE
WATERWALL SIDE HEADER
DRUM PRESSURE SENSING CONN - SEE REF NO. 4
TEST GA. CONN
BLR. DRUM VENT
REAR WATER WALL HEADER
SEE REF NO. 4
FRONT WATER WALL HEADER
CONTROL DESUPERHEATER
DRILL HOLE IN DISC
SEE REF NO. 7
DESUPERHTR.
BOILER DRUM
DETAIL "A" BOTH BOILERS
WATER DRUM
FOR CONT. SEE REF. #4
FOR CONT SEE REF. NO. 1
SEE DETAIL "A"
SEE REF 3 (TYP)
DRAIN TO BILGE
SUPERHTR. HEADER
LOW POINT DRAIN SEE REF #6
PLUGGED DRAIN
FLASH CHAMBER SEE NOTE NO. 17
SEE NOTE NO. 12
LOW POINT DRAIN - SEE REF NO. 6
SEE NOTE 5 & REF 4
TO SUPERHTR. SAFETY VALVES SEE REF NO. 3
STEAM DRUM (TYP)
VENT
3/4 DRAIN TO BILGE
3/4 DRAIN
DESUPERHEATER
LOW POINT DRAIN SEE REF # 6
TURBOGEN
GAGE CONN. GAGE LOCATED ON TURBOGEN AUX. GAGE BOARD
DRAIN TO BILGE
LOW POINT DRAIN SEE REF NO. 6
SENTINEL VALVE - EXHAUST TO ATMOS. - SET AT 5 P.S.I.G.
4" EMERGENCY CONN FOR OPERATING LOW PRESSURE TURBINE ONLY SEE REF NO. 1
TAIL PIECE TO BE DIRECTED AWAY FROM OPERATIVE PERSONNEL OR ELECTRICAL EQUIPTMENT.
L.P. TURBINE
ASTERN TURBINE
SEE NOTE NO. 15
THERMOMETER TEST CONN.
SEE NOTE NO. 16
ASTERN GUARD VALVE
THRUST BEARING
REDUCTION GEAR
CROSSOVER
20"
12"
DRAINS - SEE REF. NO. 5
H.P. TURBINE
AHEAD & ASTERN THROTTLE VALVES - INTEGRAL WITH TURBINE
ON FIRST STAGE
1" - SEE REF NO. 5
10"
5"
8"
("a")
("b")
("c")

LEGEND OF SYMBOLS

- GLOBE VALVE
- GLOBE MOTOR OPER FROM CONSOLE
- CONTROL VALVE W/ POSITIONER - AIR TO CLOSE
- SAFETY VALVE
- PRESSURE GAGE
- REMOTE TEMP IND. ON CONTROL CONSOLE
- THERMOMETER
- REMOTE PRESS. IND ON CONTROL CONSOLE
- STEAM STRAINER
- STOP CHECK VALVE
- BLANK FLANGE
- GOVERNOR VALVE HYDRAULICALLY CONTROLLED
- STEAM FLOW NOZZLE
- THERMO TEST WELL
- TRANSDUCER
- VENDOR FURN. EQUIP.
- REDUCER
- GATE VALVE
- AIR REGULATOR
- FLANGE W/DUTCHMAN
- EXPANSION JOINT, METAL BELLOWS TYPE
- FLANGE WITH BLANK

NO.	PLAN NO.
7	4650-111-20-72
6	4650-111-20-19
5	4650-111-20-30
4	4650-111-20-26
3	4650-111-20-17
1	4650-111-20-11

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-111-20-10

FRAME 2 OF 2

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-20-11

NOV 1980 10X

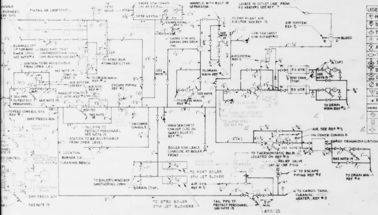
FRAME 1 OF 2

PIPING MATERIAL SCHEDULE

COMM SPECS	REMARKS	JOINTS								VALVES					FITTINGS			
		SIZE	MATERIAL	TYPE	FLG STD	BOLTS	NUTS	GASKETS	REMARKS	SIZE	MATERIAL BODY	MATERIAL TRIM	END CONN'S & PRESS STD	REMARKS	SIZE	MATERIAL	END CONN'S & PRESS STD	REMARKS
ASTM A-106 GRADE "B"	SCH 80	2½" NPS & ABOVE	FORGED OR ROLLED STEEL ASTM A-105	WELDING NECK FLANGE	ASA B16.5 600#	ASTM A193 GRADE B7	ASTM A194 GRADE 2H	SPIRAL WOUND 347 SS & ASBESTOS	LP TURBINE EMERG CONN FLANGE TO MATE WITH VENDOR FURNISH FLANGE	2½" NPS & ABOVE	CAST OR FORGED ALLOY STL 1¼CR ½ MO ASTM-A217 GR WC-6 OR ASTM-A182 GR F-11	STAINLESS STEEL STELLITE SEAT & DISC	600# ASA B16.5 B16.10 FLANGED		2½" NPS & ABOVE	WROUGHT STEEL ASTM A234 GRADE WPB SEE NOTE #6	BUTT WELDING SCH 80 ASA B16.9	
		2" NPS & BELOW		SOCKET WELDING FLANGES						2" NPS & BELOW					2" NPS & BELOW		SOCKET WELDING 3000# ASA B16.11	
STM A-53 YPE E OR S RADE A OR B EE NOTE #5	SCH 40	2½" NPS & ABOVE	FORGED OR ROLLED STEEL ASTM A-105	WELDING NECK OR SLIP ON FLANGES	150# ASA B16.5	ASTM A193 GR B7	ASTM A194 GRADE 2H	SPIRAL WOUND 304 SS & ASBESTOS		2½" NPS & ABOVE	CAST OR FORGED STEEL ASTM A216 GR WCB OR ASTM A105 OR ASTM A181 GR I OR II	STAINLESS STEEL STELLITE SEAT & DISC	150# ASA B16.5 B16.10 FLANGED		2½" NPS & ABOVE	WROUGHT STEEL ASTM A234 GRWPB	BUTT WELDING SCH 40 ASA B16.9	
		2" NPS & BELOW		SOCKETWELD OR SLIP ON FLANGES						2" NPS & BELOW					2" NPS & BELOW		3000# SOCKET WELDING ASA B16.11	

GENERAL NOTES

1. WHERE VALVE END CONNECTIONS ARE NOT SPECIFIED THEY SHALL BE THE SAME AS THOSE SPECIFIED EITHER FOR FITTINGS OR TAKE DOWN JOINTS DEPENDING UPON VALVE TYPE AND LOCATION EXCEPT THAT WELD END VALVES ARE NOT PERMITTED
2. SOOT BLOWER PIPING SHALL BE INSTALLED WITH A SLOPE NOT LESS THAN 15° WITH THE HORIZONTAL TO INSURE PROPER DRAINAGE
3. A PORTABLE PIPE SHALL BE PROVIDED FOR CONNECTING TO LP TURBINE IN CASE OF EMERGENCY. THIS PIPE SHALL BE STOWED DURING NORMAL OPERATION
4. FITTINGS CONFORMING TO ASTM A-234 AND USED WITH ASTM A-106 CARBON STEEL PIPE SHALL BE MANUFACTURED FROM SILICON KILLED STEEL.
5. WHERE ASTM A-53 PIPE IS REQUIRED BUT NOT AVAILABLE IN THE DESIRED SIZES (UNDER 2" NPS) ASTM A106 SHALL BE USED
6. ALL WELDING SHALL BE IN ACCORDANCE WITH ABS & USCG RULES
7. PIPING SHALL BE PAINTED IN ACCORDANCE WITH SECTION 14 OF SHIPS SPECS
8. PIPING SHALL BE INSULATED IN ACCORDANCE WITH SECTION 75 OF SHIPS SPECS
9. THE RADIUS OF THE CENTERLINE OF BENDS FOR ALL PIPING SHALL NOT BE LESS THAN 5 TIMES THE NOMINAL DIAMETER
10. PIPING SHALL BE ARRANGED TO PROVIDE CLEAR HEAD ROOM OF AT LEAST 7'-0" IN ALL WALKWAYS & WORK AREAS
11. ROOT VALVE TO BE CONTROLLED FROM OPERATING LEVEL
12. HOSE SELECTED FOR BLOW OUT CONNECTIONS SHALL BE SUITABLE FOR SYSTEM PRESSURE AND TEMPERATURE SEE MATERIAL SCHEDULE
13. DRAINS SHALL BE INSTALLED IN LOW POINTS OF SYSTEM
14. SOOT BLOWER DRAIN VALVE SHALL BE OPERABLE FROM SAME LEVEL AS THE SOOT BLOWER CONTROL STATION
15. TRANSDUCER SET TO OPEN MAKE-UP VALVE UPON EXCESS BOILER DRUM PRESSURE
16. ALL LOCAL PRESSURE GAUGES DOWN STREAM OF MODULATING VALVES SHALL BE LOCATED NEAR THE CONTROL SENSING CONNECTION FOR THAT VALVE
17. THE MOISTURE SEPARATOR SHALL BE LOCATED AT THE LOW POINT OF THE VERTICALLY RISING STEAM LINE TO THE WHISTLE
18. ALL CONTROL PRESSURE SENSING CONNECTIONS SHOULD BE LOCATED AT LEAST 10 PIPE DIAMETERS DOWNSTREAM OF VALVES IN A STRAIGHT RUN OF PIPE
19. STRAINER BLOWOFF LINES SHALL TERMINATE IN THE BILGE. A DOUBLER PLATE SHALL BE INSTALLED UNDER EACH BLOWOFF LINE
20. STEAM STOP VALVES 8" & LARGER TO BE FITTED WITH BYPASSES SIZED IN ACCORDANCE WITH MSS-SP-45 AND INTEGRALLY PIPED TO VALVE BODY. ALL CHECK VALVES TO BE FITTED WITH CHECK VALVE BYPASSES AND GLOBE, ANGLE OR GATE VALVES TO BE FITTED WITH GLOBE OR ANGLE VALVE BYPASSES.
21. REDUCING VALVE, PRESSURE GAUGE AND RELIEF VALVE FURNISHED AS INTEGRAL ASSEMBLY BY MANUFACTURER.


PIGTAIL OR LOOP (TYP)
½" TEST VALVE
SHORE STM CONNS LOC AT F.O. FILL STATION
SET @ 165 PSIG
ESCAPE PIPING REF 2
SHORE STM HTG DURING DRY DOCKING
WHISTLE WITH BUILT IN SEPARATOR
TO DIST PLANT AIR EJECTOR SEE REF 13
LOW SEA CHEST STM OUT REF #10
LOCATE IN OUTLET LINE FROM F.O. HEATERS SEE REF. 7
AIR SYSTEM REF 5
BLEED
BLANKED OFF LP TURBINE EMER CONN SEE NOTE #3
DEAD SHIP START COMPRESSED AIR CONN (ONE BURNER) SEE REF #5
TO STBD BLR ATOMIZERS (TYP)
STATION TO BE ACCESSIBLE FROM OPER LEV
SEE NOTE 19
CONT ON REF 3
TO DRAIN MAIN REF #4
AIR SYSTEM SEE REF 5
AIR SYS REF #5
ESCAPE PIPING REF #2
MAKE UP STM TO D.C. HTR-REF #3
TAIL PIPE TO PROTECT PERSONNEL
SEE NOTE 11
SEE NOTE 18
TO DRAIN MAIN-REF #4
AIR SYSTEM REF 5
F.O. HTR
F.O. HTR
½" TEST CONN (TYP)
¾" (VP)
TO DRAIN MAIN REF #4
TO FEED CONTROL SYS REF #6
DIFF PRESS GOV.
MAIN FEED PUMP
ON CONTR CONSOLE
HIGH SEA CHEST STM OUT (LOC IN SHAFT ALLEY) REF #12
TAIL PIPE TO PROTECT PERSONNEL SEE NOTE 19
STATION TO BE ACCESSIBLE FROM OPER LEVEL
TO GLAND SEAL SEE REF #9
MAIN CIRC SEACHEST STEAMOUT REF #11
AIR, SEE REF #5
ON CONTR CONSOLE
CARGO DEHUMIDIFICATION UNIT
SEE NOTE 19
TO DRAIN MN REF #4
LOCATION BURNER TIP CLEANING BENCH
BOILER STM LANCE CONN (LOC AT BOILER FRONT)
TO THERMOSTATIC BULB LOCATED ON REF #8
RELIEF VALVE SET @ 138 PSIG
6" TO ESCAPE PIPING REF #2
TO PORT BOILER STM JET BLOWERS
AIR SYS REF #5
4" TO CARGO TANK CLEANING WATER HEATER, REF #8
TO BOILERS WIND BOX SMOTHERING CONN
½ DRAIN (TYP)
TO STBD BOILER STM JET BLOWERS
TAIL PIPE TO PROTECT PERSONNEL SEE NOTE 19
3'-0" MIN
850/125
DIFF PRESS GOV
TURBINE CASING DRAIN TO L.P. DRAIN MAIN, REF #4

LEGEND OF SYMBOLS (CONT)

PRESS INDICATOR (REMOTE)
TEMP INDICATOR (REMOTE)
TRAP, THERMOSTATIC
THERMOSTATIC PILOT
AIR PILOT
TEMP SENSING ELEMENT
3 WAY CONTROL
DIFF PRESS AIR PILOT
CONTROL VALVE
SEPARATOR
LOW PRESS ALARM
VENDOR FURNISHED
AIR PIPING
TRAP, IMPULSE
PRESSURE SWITCH
ORIFICE

LEGEND OF SYMBOLS

GLOBE
GATE
GLOBE STOP CHECK
HOSE STOP CHECK
SWING CHECK
"Y" STRAINER
PRESS REDUCING
IMPULSE CLOSES / IMPULSE OPENS
SOLENOID
RELIEF
GLOBE, HOSE
PRESS INDICATOR (LOCAL)
TEMP INDICATOR (LOCAL)
REDUCER
DIAPHRAGM POPPET VALVE
DIAPHRAGM DRAIN VALVE
TEMPERATURE SWITCH
AIR CONTROL VALVE W/POSITIONER

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	12/23/77	3-D	1. REVISED NUT MATERIAL GRADE IN 150 PSIG STEAM SYSTEM (DES. DEV.).		
		3-A	2. DELETED PIPING TO L.O. COALESCER (DES. DEV.).		
		4-C	3. REMOVED RESERVATIONS FROM VELOCITY TABLE (DES. DEV.)		
		4-D	4. REVISED SUPERHEATER SAFETY VALVE SETTING AND HYDROTEST PER LATEST VENDOR INFORMATION.		
		3-A	5. REVISE CONTROLS FOR TANK CLEANING HEATER TEMPERATURE REGULATOR PER LATEST VENDOR INFORMATION.		
		3-B	6. ADDED DISTANCE FROM CONTROL VALVE TO SENSING LINE IN FUEL OIL HEATER STEAM SUPPLY PER VENDORS INFORMATION.		
		3-B	7. CHANGED DISTILLER AIR EJECTOR STEAM SUPPLY LINE SIZE (DES. DEV.).		
		3-B	8. CHANGED SIZE AND RELOCATED GLAND SEAL SYSTEM STEAM SUPPLY LINE (DES. DEV.).		
		2-B	9. CHANGED DOWNSTREAM PRESSURE OF AUXILIARY EXHAUST MAKE-UP VALVE TO 35 PSIG (DES. DEV.).		
		4-B	10. REARRANGED SOOT BLOWER STEAM SUPPLY DRAINS (DES. DEV.).		
		4-B	11. REVISED SOOT BLOWER HEADER DRAINS PER LATEST VENDOR INFORMATION.		
		2-B	12. ADDED SYMBOLS FOR IMPULSE TRAP AND PRESSURE SWITCH TO SYMBOL LIST.		
		4-B	13. ADDED SOOT BLOWER FOR AIR HEATER AIR SIDE (DES. DEV.).		
		4-B	14. ADDED PRESSURE SWITCH IN ATOMIZING STEAM SUPPLY LINE TO EACH BURNER (DES. DEV.).		
		4-D	15. REVISED SYSTEM OPERATING TEMPERATURES (DES. DEV.).		
		3-A,3B	16. ADDED SIZES OF RELIEF VALVES PER LATEST VENDOR INFORMATION.	M.G.	J.R.D.
2	6/1/78	5-B	1. DELETED TEMPERATURE SWITCH AND ADDED PRESSURE SWITCH IN SOOT BLOWER STEAM HEADER PER LATEST VENDOR INFORMATION.		
		4-A,B	2. REVISED DRAIN VALVE CONTROL PIPING PER LATEST VENDOR INFORMATION.		
		4-B	3. ADDED NOTE LEADER FOR L.P. TURBINE EMERGENCY STEAM THROTTLE VALVE (DES. DEV.).		
		2-A	4. ADDED ORIFICE SYMBOL TO SYMBOL LIST.	M.G.	J.R.D.
3	9/30/79	4-B	1. ADDED REDUCING STATIONS IN COMPRESSED AIR PIPING TO OPERATORS FOR MAIN STEAM TO SOOTBLOWERS VALVE, TO SOOTBLOWER STEAM SUPPLY DRAIN VALVE AND TO AIR PREHEATER SOOT BLOWER VALVES.		
		4-A	2. ADDED ORIFICE IN SOOTBLOWER STEAM SUPPLY DRAIN LINE TO ATMOSPHERIC DRAIN TANK.		
		4-A	3. INDICATED DRAINS FROM STEAM TO SOOTBLOWER SUPPLY LINE AND FROM SOOTBLOWER'S SUPPLY HEADER AS SEPARATE LINES TO DRAIN MAIN IN LIEU OF COMBINED.		
		3-C	4. ADDED NOTE NO. 21.	MLG	KEB
4	2-11-80	4-A	1. ADDED DRAIN IN STEAM SUPPLY LINES TO MAIN FEED PUMP TURBINES.		
		4-A	2. ADDED CASING DRAINS FOR MAIN FEED PUMP TURBINES.		
		3-A	3. ADDED BLOWOFF FOR STRAINER AT INLET TO CARGO DEHUMIDIFICATION UNIT.	MLG	KEB

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8430

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE
DATE 8-27-76
DRAWN
APPROVED
TRACED
APPROVED
CHECKED
APPROVED

PLAN NO. 4650-111-20-11
ALT. NO. 4

PIPING DIAGRAM OF AUXILIARY STEAM SYSTEMS

APPROVAL LETTERS

APPROVED BY	ALT. 0 DATE	ALT. 1 DATE	ALT. 2 DATE	ALT. 3 DATE	ALT. 4 DATE
OWNERS	11-3-76	1-23-78	7-11-78	11-9-79	
A.B.S.	11-4-76	3-6-78	8-15-78		
U.S.C.G.	12-8-76	3-1-78	9-5-78	1-14-80	
LLOYD'S R.S.					
U.S.P.H.S.					
MARAD					

REFERENCE PLANS

NO.	PLAN NO.	TITLE
14	4650-111-20-68	LUBE OIL FILLING, TRANSFER & PURIFYING SYSTEM
13	4650-111-20-39	LOW PRESSURE DISTILLING PLANT SYSTEM
12	4650-111-20-50	FIREMAIN SYSTEM
11	4650-111-20-45	MAIN SALT WATER CIRCULATING SYSTEM
10	4650-111-20-54	BILGE & CLEAN BALLAST SYSTEM
9	4650-111-20-31	PROP & AUX. TURBINE GLAND SEALING & EXH. SYS.
8	4650-111-20-48	CARGO TANK S.W./F.W. WASHING SYSTEM
7	4650-111-20-64	FUEL OIL SERVICE SYSTEM
6	4650-111-20-26	COMBUSTION, FEEDWATER & STM TEMP CONT SYS
5	4650-111-20-72	COMPRESSED AIR SYSTEM
4	4650-111-20-19	STEAM & F.W. DRAIN COLLECTING SYSTEM
3	4650-111-20-13	EXTRACTION & EXHAUST STEAM SYSTEMS
2	4650-111-20-17	SAFETY VALVE ESCAPE & BOILER BLOWOFF SYS
1	4650-111-20-10	MAIN STEAM SYSTEM

DATE OF ISSUE

ALTERATION	0	1	2	3	4
ENGINEERING DISTRIBUTION	8-27-76	12-23-77	6-1-78	9-30-79	2-11-80
OWNERS	2	2	2	2	2
AMERICAN BUREAU	3	3	3	3	3
LLOYD'S R.S.	-	-	-	-	-
U.S.M.A.	2	2	2	2	2
U.S. NAVY	-	-	-	-	-
U.S.C.G.	3	3	3	3	3
JOINER CONT'R.	-	-	-	-	-
GEORGE G. SHARP	2	2	2	1	1
OWNER'S INSP.	1	1	1	2	2
AM. BU. INSP.	-	-	-	-	-
LLOYD'S INSP.	-	-	-	-	-
U.S.M.A. INSP.	1	1	1	1	1
U.S. NAVY INSP.	-	-	-	-	-
U.S.C.G. INSP.	-	-	-	-	-
HULL DRAFT - 21	-	-	-	-	-
MACH DRAFT - 22	5	5	5	4	4
ELEC DRAFT - 23	1	1	1	1	1
OUTFIT DRAFT - 25	-	-	-	-	-
ESTIMATING	-	-	-	-	-
CTD SYSTEMS	4	4	6	6	6
PRODUCTION (BCO)	-	-	-	-	-
ORDER DEPT.	-	-	-	-	-
JOINER CONT. YARD	-	-	-	-	-
PLANNING - 10	2	2	2	2	2
TOTAL ENG'R DIST.	26	26	28	27	27
YARD DISTRIBUTION					
CPM					
PIECE RATE - 11					
TEST DEPARTMENT					
STRUC. PLANNING					
GROUND ASSEMBLY					
NO. WAY					
NO. WAY					
NO. WAY					
NO. WAY					
STRUCT. SUPER.					
OPTICAL DETAIL-45					
WET DOCK					
PIPE SHOP - 52	1	1	1	1	1
OUTFIT. #1 PIER					
PIPE DRAFT - 52					
BOILER SHOP - 58					
OUTSIDE MACH. - 60					
ELECTRIC SHOP - 70					
SHEET MET. SHOP - 74					
COPPER SHOP - 51					
PAINT SHOP - 75					
WELDING					
MOLD LOFT - 41					
BRACKET SHOP					
J.L. JOYCE - 02	1	1	1	1	1
GUARANTEE - 10	1	1	1	1	1
TOTAL YARD DIST.	3	3	3	3	3

M-799

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

BUILDERS PLAN NO. M4650-111-20-11

NOV 1980 10X

FRAME 2 OF 2

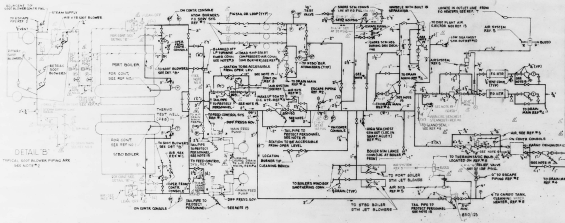
PIPING MATERIAL SCHEDULE

DESCRIPTION: SYSTEM	DESCRIPTION: PRESSURE (PSIG)	DESCRIPTION: TEMP (°F)	DESCRIPTION: HYDRO TEST (PSIG)	PIPE: SIZE	PIPE: MATERIAL	PIPE: COMM SPECS	PIPE: REMARKS	JOINTS: SIZE	JOINTS: MATERIAL	JOINTS: TYPE	JOINTS: FLG STD	JOINTS: BOLTS	JOINTS: NUTS	JOINTS: GASKETS	JOINTS: REMARKS	VALVES: SIZE	VALVES: MATERIAL BODY	VALVES: MATERIAL TRIM	VALVES: END CONN'S & PRESS STD	VALVES: REMARKS	FITTINGS: SIZE	FITTINGS: MATERIAL	FITTINGS: END CONN'S & PRESS STD	FITTINGS: REMARKS
BOILER PRESSURE DESUPERHEATED STEAM DRAINS & GAGE PIPING	810 (MAXIMUM) 866 (NORMAL) MAXIMUM SUPER HTR S.V. SETTING 1080	610 (MAXIMUM) 583 (NORMAL)	1½ × S.V. SETTING 1620	2½" NPS & ABOVE	SMLS STEEL SILICON KILLED	ASTM A-106 GRADE "B"	SCH80	2½" NPS & ABOVE	FORGED OR ROLLED STEEL ASTM A-105	WELDING NECK FLANGE	ASA B16.5 600#	ASTM A193 GRADE B7	ASTM A194 GRADE 2H	SPIRAL WOUND 347 SS & ASBESTOS	LP TURBINE EMERG CONN FLANGE TO MATE WITH VENDOR FURNISH FLANGE	2½" NPS & ABOVE	CAST OR FORGED ALLOY STL 1¼ CR ½ MO ASTM-A217 GR WC-6 OR ASTM-A182 GR F-11	STAINLESS STEEL STELLITE SEAT & DISC	600# ASA B16.5 B16.10 FLANGED		2½" NPS & ABOVE	WROUGHT STEEL ASTM A 234 GRADE WPB SEE NOTE #4	BUTT WELDING SCH 80 ASA B16.9	
				2" NPS & BELOW				2" NPS & BELOW		SOCKET WELDING FLANGES						2" NPS & BELOW					2" NPS & BELOW		SOCKET WELDING 3000# ASA B16.11	
150 PSIG AUXILIARY STEAM, DRAINS & GAGE PIPING	150 (NORMAL) RELIEF VALVE SETTING 165	454 (NORMAL) 508 (MAXIMUM)	1½ × R.V. SETTING 248	2½" NPS & ABOVE	STEEL	ASTM A-53 TYPE E OR S GRADE A OR B SEE NOTE #5	SCH 40	2½" NPS & ABOVE	FORGED OR ROLLED STEEL ASTM A-105	WELDING NECK OR SLIP ON FLANGES	150# ASA B16.5	ASTM A193 GR B7	ASTM A194 GRADE 2H	SPIRAL WOUND 304 SS & ASBESTOS		2½" NPS & ABOVE	CAST OR FORGED STEEL ASTM A 216 GR WCB OR ASTM A 105 OR ASTM A181 GR I OR II	STAINLESS STEEL STELLITE SEAT & DISC	150# ASA B16.5 B16.10 FLANGED		2½" NPS & ABOVE	WROUGHT STEEL ASTM A234 GR WPB	BUTT WELDING SCH 40 ASA B16.9	
				2" NPS & BELOW				2" NPS & BELOW		SOCKET WELD OR SLIP ON FLANGES						2" NPS & BELOW					2" NPS & BELOW		3000# SOCKET WELDING ASA B16.11	

SYMBOL	SIZE (INCHES)	FLOW #/HR	VELOCITY (FT./MIN)	ΔP/100' (PSI)	REMARKS
a	3	3272 13,410	1497 2625	0.859 2.819	NORMAL ASTERN (MAX)
c	3	3269 12,222	710 3932	0.208 5.136	NORMAL ASTERN (MAX)
d	2½	10,874 15,495	3679 4594	5.192 8.703	NORMAL RATING
e	2	1989 21,524	964 11,156	0.583 53.25	NORMAL MAXIMUM
f	2	19,000	9848	41.35	MAXIMUM
g	2½	1989	3136	0.907	NORMAL
h	2	590	1327	0.227	
i	2	1399	3148	1.119	
j	1½	720	2670	1.089	
k	2	575	1294	0.216	
l	1½	377	1398	0.329	
m	2½	720	2882	0.349	
n	3"	15,665	3364	3.665	ASTERN (MAX)
o	1¼"	302	1120	0.215	NORMAL
p	2	16,380	7356	29.32	MAX INSTANTANEOUS

GENERAL NOTES

1. WHERE VALVE END CONNECTION ARE NOT SPECIFIED THEY SHALL BE THE SAME AS THOSE SPECIFIED EITHER FOR FITTINGS OR TAKE DOWN JOINTS DEPENDING UPON VALVE TYPE AND LOCATION EXCEPT THAT WELD END VALVES ARE NOT PERMITTED.
2. SOOT BLOWER PIPING SHALL BE INSTALLED WITH A SLOPE NOT LESS THAN 15° WITH THE HORIZONTAL TO INSURE PROPER DRAINAGE.
3. A PORTABLE PIPE SHALL BE PROVIDED FOR CONNECTING TO LP TURBINE IN CASE OF EMERGENCY THIS PIPE SHALL BE STOWED DURING NORMAL OPERATION
4. FITTINGS CONFORMING TO ASTM A-234 AND USED WITH ASTM A-106 CARBON STEEL PIPE SHALL BE MANUFACTURED FROM SILICON KILLED STEEL.
5. WHERE ASTM A-53 PIPE IS REQUIRED BUT NOT AVAILABLE IN THE DESIRED SIZES (UNDER 2" NPS) ASTM A106 SHALL BE USED.
6. ALL WELDING SHALL BE IN ACCORDANCE WITH ABS & USCG RULES
7. PIPING SHALL BE PAINTED IN ACCORDANCE WITH SECTION 14 OF SHIPS SPECS
8. PIPING SHALL BE INSULATED IN ACCORDANCE WITH SECTION 75 OF SHIPS SPECS
9. THE RADIUS OF THE CENTERLINE OF BENDS FOR ALL PIPING SHALL NOT BE LESS THAN 5 TIMES THE NOMINAL DIAMETER.
10. PIPING SHALL BE ARRANGED TO PROVIDE CLEAR HEAD ROOM OF AT LEAST 7'-0" IN ALL WALKWAYS & WORK AREAS.
11. ROOT VALVE TO BE CONTROLLED FROM OPERATING LEVEL
12. HOSE SELECTED FOR BLOW OUT CONNECTIONS SHALL BE SUITABLE FOR SYSTEM PRESSURE AND TEMPERATURE SEE MATERIAL SCHEDULE.
13. DRAINS SHALL BE INSTALLED IN LOW POINTS OF SYSTEM
14. SOOT BLOWER DRAIN VALVE SHALL BE OPERABLE FROM SAME LEVEL AS THE SOOT BLOWER CONTROL STATION
15. TRANSDUCER SET TO OPEN MAKE-UP VALVE UPON EXCESS BOILER DRUM PRESSURE
16. ALL LOCAL PRESSURE GAUGES DOWN STREAM OF MODULATING VALVES SHALL BE LOCATED NEAR THE CONTROL SENSING CONNECTION FOR THAT VALVE
17. THE MOISTURE SEPARATOR SHALL BE LOCATED AT THE LOW POINT OF THE VERTICALLY RISING STEAM LINE TO THE WHISTLE.
18. ALL CONTROL PRESSURE SENSING CONNECTIONS SHOULD BE LOCATED AT LEAST 10 PIPE DIAMETERS DOWNSTREAM OF VALVES IN A STRAIGHT RUN OF PIPE
19. STRAINER BLOWOFF LINES SHALL TERMINATE IN THE BILGE. A DOUBLER PLATE SHALL BE INSTALLED UNDER EACH BLOWOFF LINE
20. STEAM STOP VALVES 6" & LARGER TO BE FITTED WITH BYPASSES SIZED IN ACCORDANCE WITH MSS-SP-45 AND INTEGRALLY PIPED TO VALVE BODY. ALL CHECK VALVES TO BE FITTED WITH CHECK VALVE BYPASSES AND GLOBE, ANGLE OR GATE VALVES TO BE FITTED WITH GLOBE OR ANGLE VALVE BYPASSES.
21. REDUCING VALVE, PRESSURE GAUGE AND RELIEF VALVE FURNISHED AS INTEGRAL ASSEMBLY BY MANUFACTURER.


ADJACENT TO SOOT BLOWER CONTR PNL
STEAM SUPPLY
TO ESCAPE PIPE REF 2
AIR HTR SOOT BLOWER
½" VENT
ROTARY SOOT BLOWERS
RETRAC SOOT BLOWERS
STEAM SUPPLY LINE DRAIN
TO DRAIN MAIN SEE REF NO 4
LEAK-OFF
FOR CONT SEE DETAIL "B"
PORT BOILER
FOR CONT. SEE REF NO.1
FROM SHIPS SERVICE CONT AIR SEE REF #5
THERMO TEST WELL (P&B)
STBD BOILER
AIR-SEE REF #5
ON CONTR CONSOLE
OPER FROM CONTR CONSOLE
TO SOOT BLOWERS SEE DET "B"
AIR, SEE REF #5
ATOM. BURNERS F.O. SERV SYS REF #7
PIGTAIL OR LOOP (TYP)
BLANKED OFF LP TURBINE EMER CONN SEE NOTE #3
DEAD SHIP START COMPRESSED AIR CONN (ONE BURNER) SEE REF #5
STATION TO BE ACCESSIBLE FROM OPER LEV.
SEE NOTE 19
CONT ON REF 3
AIR SYSTEM SEE REF 5
AIR SYS REF #5
MAKE UP STM TO D.C. HTR-REF #3
TAIL PIPE TO PROTECT PERSONNEL
TO H.P. DRAIN MAIN REF #4
TO FEED CONTROL SYS REF #6
DIFF PRESS GOV.
MAIN FEED PUMP
TURBINE CASING DRAIN TO L.P. DRAIN MAIN, REF #4
TAIL PIPE TO PROTECT PERSONNEL SEE NOTE 19
STATION TO BE ACCESSIBLE FROM OPER LEVEL
LOCATION BURNER TIP CLEANING BENCH
½" TEST VALVE
SHORE STM CONNS LOC AT F.O. FILL STA (P&S)
SET @ 165 PSIG
ESCAPE PIPING REF 2
SHORE STM HTG DURING DRY DOCKING
TO STBD BLR. ATOMIZERS (TYP)
TO DRAIN MAIN REF #4
ESCAPE PIPING REF #2
ON CONTR CONSOLE
HIGH SEA CHEST STM OUT (LOC IN SHAFT ALLEY) REF #12
BOILER STM LANCE CONN (LOC AT BOILER FRONT)
TO BOILERS WIND BOX SMOTHERING CONN
½ DRAIN (TYP)
TO PORT BOILER STM JET BLOWERS
AIR SYS REF #5
TO STBD BOILER STM JET BLOWERS
WHISTLE WITH BUILT IN SEPARATOR
TO DIST PLANT AIR EJECTOR SEE REF 15
LOW SEA CHEST STM-OUT REF #10
LOCATE IN OUTLET LINE FROM F.O. HEATERS, SEE REF. 7
AIR SYSTEM REF. 5
BLEED
F.O. HTR
½" TEST CONN (TYP)
MAIN CIRC SEACHEST STEAMOUT-REF #11
TO GLAND SEAL SEE REF #9
AIR, SEE REF #5
CARGO DEHUMIDIFICATION UNIT
TO THERMOSTATIC BULB LOCATED ON REF #8
RELIEF VALVE SET @ 130 PSIG.
6" TO ESCAPE PIPING REF #2
4" TO CARGO TANK CLEANING WATER HEATER, REF #8
TAIL PIPE TO PROTECT PERSONNEL SEE NOTE 19
850/125
850/150
TO DRAIN MN REF #4

DETAIL "B"

TYPICAL SOOT BLOWER PIPING ARR SEE NOTE #2

LEGEND OF SYMBOLS (CONT)
PRESS INDICATOR (REMOTE)
TEMP INDICATOR (REMOTE)
TRAP, THERMOSTATIC
THERMOSTATIC PILOT
AIR PILOT
TEMP SENSING ELEMENT
3 WAY CONTROL
DIFF PRESS AIR PILOT
CONTROL VALVE
SEPARATOR
LOW PRESS ALARM
✱ VENDOR FURNISHED
AIR PIPING
TRAP, IMPULSE
PRESSURE SWITCH
ORIFICE

LEGEND OF SYMBOLS
⋈ GLOBE
GATE
GLOBE STOP CHECK
HOSE STOP CHECK
SWING CHECK
"Y" STRAINER
PRESS REDUCING
IMPULSE CLOSES / IMPULSE OPENS
SOLENOID
RELIEF
GLOBE, HOSE
PRESS INDICATOR (LOCAL)
TEMP INDICATOR (LOCAL)
REDUCER
DIAPHRAGM POPPET VALVE
DIAPHRAGM DRAIN VALVE
TEMPERATURE SWITCH
AIR CONTROL VALVE W/POSITIONER

NO.	PLAN NO.	
14	4650-111-20-68	LUBE OIL FILLING
13	4650-111-20-39	LOW PRESSURE
12	4650-111-20-30	FIREMAIN SYST
11	4650-111-20-45	MAIN SALT WA
10	4650-111-20-54	BILGE & CLEAN
9	4650-111-20-31	PROP & AUX TUR
8	4650-111-20-48	CARGO TANK S.
7	4650-111-20-64	FUEL OIL SERVIC
6	4650-111-20-26	COMBUSTION FEED
5	4650-111-20-72	COMPRESSED A
4	4650-111-20-19	STEAM & F.W. D
3	4650-111-20-15	EXTRACTION &
2	4650-111-20-17	SAFETY VALVE
1	4650-111-20-10	MAIN STEAM

REFERENCE P

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 10X

BUILDERS PLAN NO. M4650-111-20-13

FRAME 1 OF 2

PIPING MATERIAL SCHEDULE

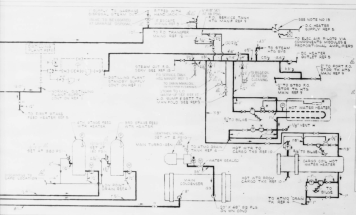
MML ECS	REMARKS	SIZE	MATERIAL	TYPE	FLG STD	BOLTS	NUTS	GASKETS	REMARKS	SIZE	MATERIAL BODY	MATERIAL TRIM	END CONNS & PRESS STD	REMARKS	SIZE	MATERIAL	END CONNS & PRESS STD	REMARKS
		JOINTS								VALVES					FITTINGS			
		2½" & ABOVE	FORGED OR ROLLED STEEL SI KILLED ASTM A-106	WELDING NECK FLANGE	300# ASA B16.5	ASTM A-193 GR B7	ASTM A-194 GR 2H	SPIRAL WOUND 347 SS & ASBESTOS	FLANGE BORE TO MATCH I.D. OF PIPE	2½" & ABOVE	CAST OR FORGED ALLOY STEEL 1¼ CR-½ MO ASTM A217 GR WC6 OR ASTM A182 GR F11	SS WITH STELLITE SEATS & DISCS	300# FLANGED ASA B16.5, B16.10 OR BUTTWELD		2½" & ABOVE	WROUGHT STEEL ASTM A-234 GR WPB	BUTTWELD SCH 40 ASA B16.9	FOR WELDED BRANCHES SEE PIPE
		2" & BELOW		SOCKET WELDING FLANGE						2" & BELOW			300# FLANGE ASA B16.5 ASA B16.10		2" & BELOW		SOCKET WELD 3000# ASA B16.11	
		2½" & ABOVE	FORGED OR ROLLED STEEL ASTM A-181 GR I OR A105	WELDING NECK OR SLIP-ON FLANGES	ASA B16.5	ASTM A-193 GR B7	ASTM A-194 GR 2H	SPIRAL WOUND 304 SS & ASBESTOS	300# FOR 2ND HP EXTRACTION & 150# FOR AUX EXH MN	2½" & ABOVE	CAST OR FORGED STEEL ASTM A216 GR WCB OR ASTM A105		FLANGED ASA B16.5 B16.10	300# FOR 2ND HP EXTRACTION & 150# FOR CROSSOVER & AUX. EXH. MAIN	2½" & ABOVE	WROUGHT STEEL ASTM A-234 GR WPB	BUTTWELD SCH 40 ASA B16.9	
		2" & BELOW		SOCKET WELD OR SLIP ON FLANGE						2" & BELOW					2" & BELOW		SOCKET WELD 3000# ASA B16.11	
		2½" & ABOVE	FORGED OR ROLLED STEEL ASTM A181 GR I	SLIP-ON FLANGE	150# ASA B16.5	ASTM A307 GR B	ASTM A307	ASBESTOS COMPOSITION	FOR TURBO-GEN FLANGES SHALL BE COMMERCIAL CLASS 125	2½" & ABOVE	CAST STEEL ASTM A-216 GR WCB NODULAR IRON ASTM A-395	BRONZE OR SS	150# FLANGED ASA B16.5 B16.10	MN TURBO GEN EXH VALVE TO BE CAST STEEL	2½" & ABOVE	WROUGHT STEEL ASTM A-234 GR WPB	BUTTWELD SCH 40 ASA B16.9	FOR TURBO GEN. EXHAUST FITTINGS SCH. 10
		2" & BELOW	MALLEABLE IRON ASTM A-197	UNION SCREWED	COMM 300#					2" & BELOW	BRONZE ASTM B-61	BRONZE	SCREWED 200#		2" & BELOW	MALLEABLE IRON ASTM A-197	SCREWED 150# ASA B16.3	

GENERAL NOTES

1. WELDING SHALL BE IN ACCORDANCE WITH ABS & USCG RULES.
2. PIPING SHALL BE ARRANGED TO PROVIDE CLEAR HEADROOM OF AT LEAST 7'-0" IN WALKWAYS AND WORKAREAS.
3. THE RADIUS OF THE CENTER OF BENDS FOR ALL PIPE SHALL BE PREFERABLY NOT LESS THAN 5 TIMES THE NOMINAL DIAMETER.
4. ALL VALVES TO BE ACCESSIBLE FOR LOCAL MANUAL OPERATION.
5. PIPING SHALL BE INSULATED IN ACCORDANCE WITH SECTION 75 OF SHIPS SPEC.
6. STEAM STOP VALVES 8" & LARGER TO BE FITTED WITH BYPASSES SIZED IN ACCORDANCE WITH MSS-SP-45 AND INTEGRALLY PIPED TO VALVE BODY. CHECK VALVES TO BE FITTED WITH CHECK VALVE BYPASSES AND GLOBE, ANGLE OR GATE VALVES TO BE FITTED WITH GLOBE OR ANGLE VALVE BYPASSES.

8. EXHAUST MAIN SHALL PITCH DOWN FROM D.C. HEATER TO REDUCING STATION ON REF 2. PIPING TO RUN DIRECT AND WITHOUT POCKETS.

10. MATERIAL FOR CONTROL VALVE AIR PILOT PIPING SHALL BE IN ACCORDANCE WITH REF 14.
11. ELECTRICAL AIR PILOT VALVES TO BE LOCATED NEAR EACH OTHER ON THE OPERATING FLAT AND SHALL BE SET TO MAINTAIN 38 PSIG IN THE D.C. HEATER SHELL.
12. PRESSURE SWITCH TO BE ARRANGED TO CLOSE CROSSOVER EXTRACTION VALVE WHEN PRESSURE DECREASES TO 30 PSIG AND TO OPEN CROSSOVER EXTRACTION VALVE WHEN PRESSURE INCREASES TO 35 PSIG. SOLENOID VALVE TO BE ARRANGED TO VENT ACTUATOR DIAPHRAGM ON ELECTRICAL FAILURE.
13. VALVE SHALL BE OF THE SHROUDED SEAT OR DASH POT TYPE TO ELIMINATE CHATTER.


1" SUPPLY TO GARBAGE DISPOSAL STEAM OUT
VALVE TO BE LOCATED AT GARBAGE DISPOSAL
FITTED WITH HAND JACK
6"R-8" SET AT 48 PSIG
& ESCAPE PIPING REF 3
F.O. SERVICE TANK HTG MANIF REF 9
SEE NOTE NO 13
D.C. HEATER SUPPLY REF 5
TO ELEC AIR PILOTS VIA COMPONENTS MODULES & PROPORTIONAL AMPLIFIERS
10"
TO F.O. TRANSFER MAINS REF 12
(O) 2½"
DISTILLING PLANT REF 11
TO STEAM HTG SYS
D.C. HEATER OUTLET REF 5
2" TO PORT F.O. STOR TK HTG MAIN REF 9
2" TO STBD F.O. STOR TK HTG MAIN REF 9
STEAM OUT F.O. SERV SEE REF 13
F.O. SERVICE TANK HTG MANIF REF 9
TO DRAIN MAIN OIL DETECTOR CLEANING
STEAM TO L.O. WARM-UP SEE REF 15
L.O. SUMP & SETT TK MANIFOLD SEE REF 9
TO BILGE OIL DETECTOR CLEANING
DISTILLING PLANT STANDBY SUPPLY CONT ON REF 11
NORMAL DISTILLING PLANT SUPPLY CONT ON REF 11
TO FIRST STAGE FEED HEATER REF 5
HOT WATER HEATER
¾" TO BILGE
1/8" VENT
4TH STAGE FEED WTR HEATER
3RD STAGE FEED WTR HEATER
SET AT 380 PSI
SET AT 180 PSI
SENTINEL VALVE SET AT 2 PSIG
MAIN TURBO-GEN
TO ATMO DRAIN TANK REF 4
HOT WTR TO CARGO TKS REF 10
WATER SEALED
CARGO COIL HOT WATER HEATER
¾" TO BILGE
DISCHARGE TO SAFE LOCATION
LOW POINT DRAIN REF 4
MAIN CONDENSER
HOT WTR FROM CARGO TKS REF 10
TO BILGE
TO ATMO DRAIN TK REF 4
20" X 48" SQ FLG ON MN COND

LEGEND OF SYMBOLS

GATE VALVE MOTOR OPER FROM CONSOLE	GLOBE VALVE
GATE VALVE LOCKED CLOSED	GATE VALVE
3-WAY SOLENOID VALVE	HOSE GLOBE VALVE
VENDOR FURNISHED	STOP CHECK VALVE
"Y" STRAINER	SWING CHECK VALVE
PRESSURE SWITCH	BACK PRESS SPRING LOADED VALVE
AIR PIPE	GATE VALVE WATER SEALED
LOCAL THERMOMETER	STOP CHK VLV MOTOR OPER FROM CONSOLE
CHECK VALVE WITH SCREW-DOWN MECHANISM	THERMOSTATIC CONT VALVE AIR OPER.
CONTROL VALVE, AIR OPER. W/ POSITIONER	VACUUM BREAKER
2-WAY SOLENOID VALVE	SAFETY RELIEF VALVE
	RECIRCULATING VALVE AIR OPER
	CONTROL VALVE AIR OPER
	AIR PILOT VALVE
	ELECTRICAL AIR PILOT
	TRANSDUCER
	THERMOSTAT
	THERMOSTATIC BULB
	"Y" STRAINER WITH BLOW OFF
	TRAP
	PRESSURE GAGE
	REMOTE PRESS INDICATOR ON CONTROL CONSOLE
	REMOTE TEMP INDICATOR ON CONTROL CONSOLE

REFERENCE PLANS

NO.	PLAN NO.	TITLE
15	4650-111-20-45	MAIN SALT WATER CIRCULATING SYSTEM
14	4650-111-20-72	COMPRESSED AIR SYSTEM
13	4650-111-20-64	FUEL OIL SERVICE SYSTEM
12	4650-111-20-62	FUEL OIL FILLING AND TRANSFER SYSTEM
11	4650-111-20-89	LOW PRESSURE DISTILLING PLANT SYSTEM
10	4650-111-20-38	CARGO TANK F.W. HEATING SYSTEM
9	4650-111-20-35	TANK HEATING COIL & STEAMING OUT SYSTEMS
8	4650-111-20-30	PROPULSION-TURBINE DRAIN SYSTEM
7	4650-111-20-26	COMBUSTION, FEEDWATER & STM TEMP CONT SYS
5	4650-111-20-23	CONDENSATE & DRAIN TRANSFER SYSTEM
4	4650-111-20-19	STEAM & F.W. DRAIN COLLECTING SYSTEM
3	4650-111-20-17	SAFETY VALVE ESCAPE & BOILER BLOWOFF SYS
2	4650-111-20-11	AUXILIARY STEAM SYSTEM
1	4650-111-20-10	MAIN STEAM SYSTEM

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	12/15/76	D-4	1. REVISED DESIGN PRESSURE & TEMPERATURE TO REFLECT FINAL HEAT BALANCE VALUES (DES. DEV.).		
		D-4	2. REVISED 1ST & 2ND H.P. EXTRACTION HYDROTEST PRESSURES TO 1½ TIMES MAXIMUM WORKING PRESSURE PER 46 CFR 56.97-40 (a) AND U.S. COAST GUARD LETTER SERIAL 3514 DATED 8 DECEMBER 1976.		
		D-4	3. REMOVED RESERVATIONS FROM VELOCITY TABLE (DES. DEV.).		
		D-4	4. REVISED CROSSOVER EXTRACTION, AUXILIARY EXHAUST AND L.P. SERVICE STEAM HYDROTEST PRESSURES PER 46 CFR 56.97-40 (c).		
		D-3	5. CHANGED 2ND H.P. EXTRACTION NUT MATERIAL TO SYM. 2H (DES. DEV.)		
		D-3	6. DELETE "OR" AFTER "A105" IN 2ND H.P. EXTRACTION VALVE MATERIAL PER G&S LETTER DATED 3 NOVEMBER 1976.		
		A-4	7. ADDED REMOTE PRESSURE & TEMPERATURE INDICATORS TO MAIN ENGINE CROSSOVER (DES. DEV.).		
		A-5	8. ADDED AUX. EXHAUST DUMP VALVE SETTING (DES. DEV.).		
		A-3, A-4	9. ADDED RELIEF VALVE SIZES ON 3RD & 4TH STAGE FEED WATER HEATERS (DES. DEV.).		
		B-5	10. REVISED SIZE OF AUX. EXHAUST SYSTEM SAFETY VALVE (DES. DEV.).		
		A-4	11. REVISED CONTROL PIPING FOR AUX. EXHAUST DUMP VALVE (DES. DEV.).		
		B-2	12. ADDED SYMBOL FOR CONTROL VALVE WITH POSITIONER (DES. DEV.).		
		B-3	13. ADDED STEAM CLEANING LINE FOR F.W. DRAINS OIL DETECTOR (DES. DEV.)		
		B-3	14. ADDED STEAM CLEANING LINE FOR BILGE OIL DETECTOR (DES. DEV.)		
		A-4	15. ADDED AIR PILOT TO PERMIT INDEPENDENT CONTROL OF FEED PUMP RECIRCULATION VALVES (DES. DEV.)		
		B-3	16. ADDED GATE VALVE AND GLOBE STOP-CHECK VALVE TO GARBAGE DISPOSAL STEAM OUT (DES. DEV.)	MG	J.R.D.
2	6/1/78	A-4	1. MOVED REMOTE PRESSURE AND TEMPERATURE INDICATORS TO EXTRACTION PIPING (DES. DEV.).		
		B-4	2. ADDED AIR PIPING TO CROSSOVER EXTRACTION VALVE PILOT (DES. DEV.).		
		A-4	3. ADDED PRESSURE SWITCH FOR CROSSOVER EXTRACTION VALVE CONTROL TO MAIN ENGINE CROSSOVER (DES. DEV.)		
		A-4	4. DELETED EXTRA VALVES FROM FEED PUMP RECIRCULATION VALVE AIR SIGNAL LINES AND DENOTED AIR LINES (DES. DEV.).		
		B-3	5. REVISED AUX. EXHAUST SYSTEM SAFETY VALVE SETTING (DES. DEV.)		
		B-3	6. ADDED HOSE CONN. FOR L.O. WARM-UP STEAM TO L.O. COOLER PER G&S LETTER DATED 22 FEBRUARY 1978.		
		B-4	7. ADDED SYMBOL FOR PRESSURE SWITCH.		
		C-3	8. ADDED NOTE NO. 12.		
		A-1	9. ADDED REFERENCE NO. 15.		
		D-4	10. REVISED DESIGN PRESSURE FOR AUX. EXHAUST MAIN & L.P. SERVICE STEAM AND DESIGN TEMPERATURE FOR L.P. SERVICE STEAM (DES. DEV.).	M.G.	J.R.D.
3	10/30/79	A-4, B-4	1. DELETED SENSING LINES FROM H.P. TURBINE EXTRACTION FOR OPERATION OF H.P. FEED RECIRCULATION		
		A-3	2. CHANGED MAIN TURBO-GENERATOR SENTINEL VALVE SETTING FROM 3 PSIG TO 2 PSIG		
		A-1	3. DELETED REFERENCE NO. 6	MLG	KEB
4	2-11-80	A-3, 4	1. ADDED PIPING ARRGT. FOR DISCHARGE FROM 3RD & 4TH STAGE FEEDWATER HEATER RELIEF VALVES		
		B-4	2. ADDED BY-PASS AROUND BACK PRESSURE VALVE IN EACH FEED PUMP TURBINE EXHAUST	MLG	KEB

HULL	DESIGN	CHARGE
4651		
4650	27,340 DWT CONTAINERSHIP	8450

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE DATE 9-14-76
DRAWN APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. 4650-111-20-13 ALT. NO. 4

PIPING DIAGRAM OF EXTRACTION AND EXHAUST STEAM SYSTEMS

APPROVAL LETTERS

APPROVED BY	ALT. 0 DATE	ALT. 1 DATE	ALT. 2 DATE	ALT. 3 DATE	ALT. 4 DATE
OWNERS	11-3-76	1-23-78	7-11-78	11-9-79	
A.B.S.	11-4-76	3-6-78	8-15-78		
U.S.C.G.	12-8-76	3-1-78	9-5-78	1-14-80	
LLOYD'S R.S.	☒	☒	☒	☒	☒
U.S.P.H.S.	☒	☒	☒	☒	☒
MARAD	☒	☒	☒	☒	☒

M.800

AUTOMATION INDUSTRIES, INC.
VITRO LABORATORIES DIVISION
GRAPHIC SERVICES 871-4161
14000 GEORGIA AVENUE SILVER SPRING, MARYLAND 20910

NOV 1980 **10X**

BUILDERS PLAN NO. M4650-111-20-13

FRAME 2 OF 2

PIPING MATERIAL SCHEDULE

DESCRIPTION				PIPE				JOINTS							
SYSTEM	PRESSURE (PSIG)	TEMP (°F)	HYDRO TEST (PSIG)	SIZE	MATERIAL	COMML SPECS	REMARKS	SIZE	MATERIAL	TYPE	FLG STD	BOLTS	NUTS	GASKETS	REMARKS
1ST HP EXTRACTION STEAM	320 (NORMAL) 353 (MAX)	754 (NORMAL) 772 (MAX)	570 & WORKING CONDITIONS	ALL SIZES	SEAMLESS CARBON STEEL SI KILLED SCH 40 BLACK	ASTM A106 GR B		2½" & ABOVE	FORGED OR ROLLED STEEL SI KILLED ASTM A-105	WELDING NECK FLANGE	300# ASA B16.5	ASTM A-193 GR B7	ASTM A-194 SYM 2H	SPIRAL WOUND 347 SS & ASBESTOS	FLANGE BORE TO MATCH I.D. OF PIPE
								2" & BELOW		SOCKET WELDING FLANGE					
2ND HP EXTRACTION STEAM	158 (NORMAL) 176 (MAX)	617 (NORMAL) 638 (MAX)	270 & WORKING CONDITIONS	2½" & ABOVE	CARBON STEEL SCH 40 BLACK	ASTM A53 TY S OR E GR A OR B		2½" & ABOVE	FORGED OR ROLLED STEEL ASTM A-181 GR I OR A105	WELDING NECK OR SLIP-ON FLANGES	ASA B16.5	ASTM A193 GR B7	ASTM A194 SYM. 2H	SPIRAL WOUND 304 SS & ASBESTOS	300# FOR 2ND HP EXTRACTION & 150# FOR AUX EXH MN
CROSSOVER EXTRACTION STEAM AUX. EXH. MAIN	57 (NORMAL) 65 (MAX) 59 (NORMAL) 48 (MAX)	453 (NORMAL) 474 (MAX) 286 (NORMAL) 480 (MAX)	WORKING CONDITIONS	2" & BELOW		ASTM A106 GR B		2" & BELOW		SOCKET WELD OR SLIP ON FLANGE					
LP EXTRACTION STEAM	11.2 PSIA (NORM) 12.5 PSIA (MAX)	199 (NORMAL) 204 (MAX)	WORKING CONDITIONS	26" & ABOVE	CARBON STEEL WELDED SCH 10	ASTM A134 GR A285C		2½" & ABOVE	FORGED OR ROLLED STEEL ASTM A181 GR I	SLIP-ON FLANGE	150# ASA B16.5	ASTM A307 GR B	ASTM A307	ASBESTOS COMPOSITION	FOR TURBO-GEN FLANGES SHALL BE COMMERCIAL CLASS 125
TURBO GEN EXHAUST	1 PSIA (MAX)	102 (SAT)		2½" TO 24"	CARBON STEEL SCH 40	ASTM A53 TY E OR S GR B									
L.P. SERVICE STEAM	38 (NORMAL) 48 (MAX)	285 (NORMAL) 296 (MAX)		2" & BELOW		ASTM A106 GR B		2" & BELOW	MALLEABLE IRON ASTM A-197	UNION SCREWED	COMM 300#				

	VALVES					FITTINGS			
		MATERIAL							
SYSTEM	SIZE	BODY	TRIM	END CONNS & PRESS STD	REMARKS	SIZE	MATERIAL	END CONNS & PRESS STD	REMARKS
1ST HP EXTRACTION STEAM	2½" & ABOVE	CAST OR FORGED ALLOY STEEL 1¼ CR - ½ MO ASTM A217 GR WC6 OR ASTM A182 GR F11	SS WITH STELLITE SEATS & DISCS	300# FLANGED ASA B16.5, B16.10 OR BUTTWELD		2½" & ABOVE	WROUGHT STEEL ASTM A-234 GR WPB	BUTTWELD SCH 40 ASA B16.9	FOR WELDED BRANCHES SEE PIPE
	2" & BELOW			300# FLANGE ASA B16.5 ASA B16.10		2" & BELOW		SOCKET WELD 3000# ASA B16.11	
2ND HP EXTRACTION STEAM	2½" & ABOVE	CAST OR FORGED STEEL ASTM A216 GR WCB OR ASTM A105		FLANGED ASA B16.5 B16.10	300# FOR 2ND HP EXTRACTION & 150# FOR CROSSOVER & AUX. EXH. MAIN	2½" & ABOVE	WROUGHT STEEL ASTM A-234 GR WPB	BUTTWELD SCH 40 ASA B16.9	
CROSSOVER EXTRACTION STEAM AUX. EXH. MAIN	2" & BELOW					2" & BELOW		SOCKET WELD 3000# ASA B16.11	
LP EXTRACTION STEAM TURBO GEN EXHAUST	2½" & ABOVE	CAST STEEL ASTM A-216 GR WCB NODULAR IRON ASTM A-395	BRONZE OR SS	150# FLANGED ASA B16.5 B16.10	MN. TURBO GEN EXH. VALVE TO BE CAST STEEL	2½" & ABOVE	WROUGHT STEEL ASTM A-234 GR WPB	BUTTWELD SCH 40 ASA B16.9	FOR TURBO GEN. EXHAUST FITTINGS SCH. 10
L.P. SERVICE STEAM	2" & BELOW	BRONZE ASTM B-61	BRONZE	SCREWED 200#		2" & BELOW	MALLEABLE IRON ASTM A-197	SCREWED 150# ASA B16.3	

FLOW TABLE

LINE SYM	PIPE SIZE	FLOW LB/HR	VELOCITY FT/MIN	PRESS DROP PSI/100'	REMARKS
a	6"	15,115 370	10,174 249	1.145 0.001	MAXIMUM NORMAL
b	3"	2220	5839	0.968	NORMAL
c	5"	12,895 370	12,533 360	2.212 0.003	MAXIMUM NORMAL
d	3"	2400	6313	1.125	MAXIMUM
e	5"	10,495 230	10,201 224	1.507 0.001	MAXIMUM NORMAL
f	4"	3700	8707	1.441	MAXIMUM FLOW
g	4"	4795	7324	1.042	↓
h	2"	700	4056	0.767	↓
k	1"	175	3937	1.707	↓
m	4"	4095	6255	0.777	↓
n	8"	1700	4472	0.588	↓
o	2½"	1110	4508	0.768	MAXIMUM FLOW
p	2½"	1110	4508	0.768	↓
q	4"	12,826 11,330	4667 4490	1.665 1.448	MAXIMUM NORMAL
r	5"	15,555 13,186	6408 5720	1.424 1.036	↓
s	12"	16,577 14,844	10,894 16,767	0.184 0.163	↓
t	12"	13,606 11,811	5860 9507	0.141 0.120	↓
u	10"	4700	4895	0.047	RATING
v	6"	13,426 10,811	7481 6445	0.363 0.546	RATING NORMAL
w	10"	24,232 16,277	6587 3722	0.267 0.106	MAX ASTERN NORMAL AHEAD
x	5"	5406	6477	0.548	NORMAL
y	4"	5406	7603	1.233	↓
z	3"	2810	7391	1.503	↓
aa	36"	22,600	21,814	0.019	2500 KW RATE

GENERAL NOTES

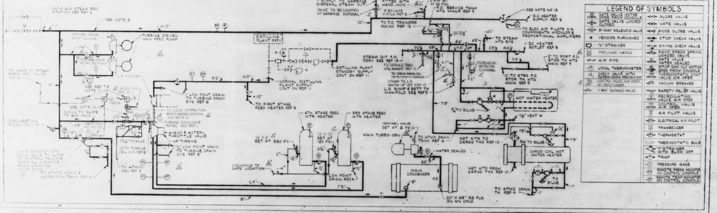
1. WELDING SHALL BE IN ACCORDANCE WITH ABS & USCG RULES.
2. PIPING SHALL BE ARRANGED TO PROVIDE CLEAR HEADROOM OF AT LEAST 7'-0" IN WALKWAYS AND WORKAREAS.
3. THE RADIUS OF THE CENTER OF BENDS FOR ALL PIPE SHALL BE PREFERABLY NOT LESS THAN 5 TIMES THE NOMINAL DIAMETER.
4. ALL VALVES TO BE ACCESSIBLE FOR LOCAL MANUAL OPERATION.
5. PIPING SHALL BE INSULATED IN ACCORDANCE WITH SECTION 75 OF SHIPS SPEC.
6. STEAM STOP VALVES 8" & LARGER TO BE FITTED WITH BYPASSES SIZED IN ACCORDANCE WITH MSS-SP-45 AND INTEGRALLY PIPED TO VALVE BODY. CHECK VALVES TO BE FITTED WITH CHECK VALVE BYPASSES AND GLOBE, ANGLE OR GATE VALVES TO BE FITTED WITH GLOBE OR ANGLE VALVE BYPASSES.

8. EXHAUST MAIN SHALL PITCH DOWN FROM D.C. HEATER TO REDUCING STATION ON REF 2. PIPING TO RUN DIRECT AND WITHOUT POCKETS.

10. MATERIAL FOR CONTROL VALVE AIR PILOT PIPING SHALL BE IN ACCORDANCE WITH REF 14.
11. ELECTRICAL AIR PILOT VALVES TO BE LOCATED NEAR EACH OTHER ON

THE OPERATING FLAT AND SHALL BE SET TO MAINTAIN 38 PSIG IN THE D.C. HEATER SHELL.

12. PRESSURE SWITCH TO BE ARRANGED TO CLOSE CROSSOVER EXTRACTION VALVE WHEN PRESSURE DECREASES TO 30 PSIG AND TO OPEN CROSSOVER EXTRACTION VALVE WHEN PRESSURE INCREASES TO 35 PSIG. SOLENOID VALVE TO BE ARRANGED TO VENT ACTUATOR DIAPHRAGM ON ELECTRICAL FAILURE.
13. VALVE SHALL BE OF THE SHROUDED SEAT OR DASH POT TYPE TO ELIMINATE CHATTER.


FROM AUX STEAM RED STATION SEE REF 2
SEE NOTE 8
W10"
SENTINEL VALVE SET AT 50 PSIG
TURBINE DRIVEN MAIN FEED PUMP
DISTILLING PLANT REF 11
TO MAKE UP STEAM PRESS RED VALVE REF 2
L.P. TURBINE
SEE REF 7 & NOTE 11
BLEED OFF REF. 14
SEE NOTE 10
PIPING TO SLOPE TO EXH MAIN
MISC HEATING STEAM SERVICE
COMPRESSED AIR REF 14
TO CLOSE EXTRACTION WHEN MANEUVERING SEE NOTE 12
TURBINE CROSSOVER PIPING SEE REF. 1
AHEAD & ASTERN THROTTLE VALVE
HP TURBINE
¾" TO BILGE
½" TO TURBINE DRN SYS REF 8
½" LOW POINT DRAIN TO TURBINE DRAIN SYS REF 8
1" LOW POINT DRAIN TO TURBINE DRAIN SYS REF 8
AUX EXHAUST STM DUMP VALVE TO CLOSE ON CONTROL FAILURE (MANUAL OVERRIDE FROM CONSOLE) SET AT 42 PSIG
TO ATMOS DRAIN & INSPECTION TANK REF 4
TO ATMOS DRN REF 4
S12"
U10"
NORMAL DISTILLING PLANT SUPPLY CONT ON REF 11
TO FIRST STAGE FEED HEATER, REF 5
4TH STAGE FEED WTR HEATER
3RD STAGE FEED WTR HEATER
SET AT 880 PSI
SET AT 180 PSI
DISCHARGE TO SAFE LOCATION
LOW POINT DRAIN REF 4
1" SUPPLY TO GARBAGE DISPOSAL STEAM OUT
VALVE TO BE LOCATED AT GARBAGE DISPOSAL
FITTED WITH HAND JACK
8" ESCAPE PIPING REF 3
6"-R-8" SET AT 48 PSIG
F.O. SERVICE TANK HTG MANIF REF 9
TO F.O. TRANSFER MAINS REF 12
SEE NOTE NO 13
D.C. HEATER SUPPLY REF 5
TO ELEC AIR PILOTS VIA COMPONENTS MODULES & PROPORTIONAL AMPLIFIERS
TO STEAM HTG SYS
D.C. HEATER OUTLET REF 5
2" TO PORT F.O. STOR TK HTG MAIN REF 9
2" TO STBD F.O. STOR TK HTG MAIN REF 9
STEAM OUT F.O. SERV SEE REF 13
DISTILLING PLANT STANDBY SUPPLY CONT ON REF 11
TO DRAIN MAIN OIL DETECTOR CLEANING
TO BILGE OIL DETECTOR CLEANING
STEAM TO L.O. WARM-UP SEE REF 15
L.O. SUMP & SETT TK MANIFOLD SEE REF 9
HOT WATER HEATER
1/8" VENT
SENTINEL VALVE SET AT 2 PSIG
MAIN TURBO-GEN
TO ATMO DRAIN TANK REF 4
WATER SEALED
MAIN CONDENSER
20" X 48" SQ FLG ON MN COND
HOT WTR TO CARGO TKS REF 10
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TO BILGE
TO ATMO DRAIN TK REF 4
LEGEND OF SYMBOLS
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CONTROL VALVE, AIR OPER. W/ POSITIONER
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HOSE GLOBE VALVE
STOP CHECK VALVE
SWING CHECK VALVE
BACK PRESS SPRING LOADED VALVE
GATE VALVE WATER SEALED
STOP CHK VLV MOTOR OPER FROM CONSOLE
THERMOSTATIC CONT VALVE AIR OPER
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TRANSDUCER
THERMOSTAT
THERMOSTATIC BULB
"Y" STRAINER WITH BLOW OFF
TRAP
PRESSURE GAGE
REMOTE PRESS INDICATOR ON CONTROL CONSOLE
REMOTE TEMP INDICATOR ON CONTROL CONSOLE

NO.	PLAN NO
15	4650-111-20
14	4650-111-
13	4650-111-
12	4650-111-
11	4650-111-
10	4650-111-
9	4650-111-
8	4650-111-
7	4650-111-
5	4650-111-
4	4650-111-
3	4650-111-
2	4650-111-
1	4650-111-